THE GRILL: **Tech provocateur Virgil Griffith talks about Internet anonymity and designing machines that can feel.** PAGE 14

COMPUTERWORLD

COMPUTERWORLD'S TOP

GREEN IT ORGANIZATIONS

Green Achievers

FROM TEMPERATURE SENSORS TO EMPLOYEE INCENTIVES, THE SKY'S THE LIMIT FOR THESE GREEN-IT INNOVATORS. PAGE 20

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APRIL 20, 2009
VOL. 43, NO. 15 $5/COPY

News & Analysis

BI vendors are touting ultrafast data-loading. But is there a big need for that speed? PAGE 8

Security still sells in hard economic times, Symantec's CEO claims. PAGE 11

An update to Android likely won't push it past the iPhone on functionality. PAGE 12

Opinions

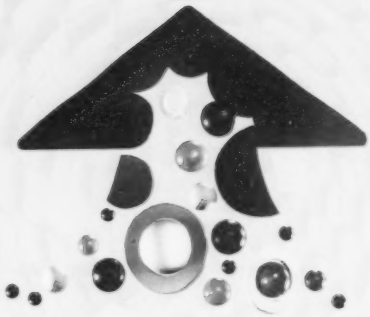
If your users are ignorant about IT's real role, do something about it. PAGE 18

As Amazon.com was sinking in the mire of bad PR last week, Frank Hayes was thinking about your IT shop. PAGE 40

Careers

Are you worried you'll never be able to retire? You're not alone. PAGE 36

Deal with the virtual — and-reality.



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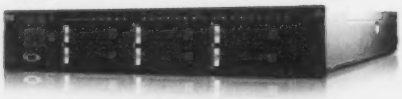

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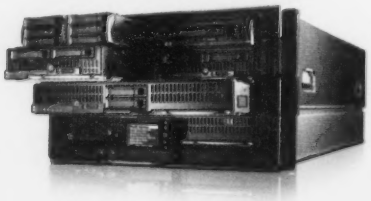

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*Source: IDC Quarterly Server Virtualization Tracker, October 2008.

Inside

COMPUTERWORLD ■ APRIL 20, 2009

COMPUTERWORLD'S TOP GREEN-IT ORGANIZATIONS

22 Fertile Ground for Green-IT Innovation. We showcase 12 end-user organizations that are leaders when it comes to reducing IT's power consumption and using technology to improve energy efficiency. Plus, a look at how we chose the winners.

24 [NO. 1] Mohawk Fine Papers uses thousands of sensors to monitor everything from office lighting to smokestack emissions, pouring data into a Web-based system for real-time analysis.

26 [NO. 2] State Street virtualized half its servers and started a "zero footprint, maximum impact" initiative that eliminates small data centers.

26 [NO. 3] Allstate Insurance replaced four data centers with two new ones, saving $65 million compared to what it would have cost to build out the old facilities.

28 [NO. 4] Citigroup educates users on the carbon cost of electronic storage as part of an effort to promote behavioral change.

28 [NO. 5] PricewaterhouseCoopers will open a high-voltage data center in the fall, reducing everything from copper consumption to air conditioning needs.

29 [NO. 6] The state of Indiana is consolidating data centers, virtualizing servers and deploying energy-efficient desktop machines, saving more than $13.9 million annually.

30 [NO. 7] KPMG built a brand-new data center that runs 14 natural-gas-powered microturbines that generate the majority of electricity needed to run the facility.

30 [NO. 8] Seventh Generation replaced desktop PCs and personal printers with more-energy-efficient laptops and all-in-one printers. Next? A solar backpack that can charge handheld devices.

31 [NO. 9] Office Depot reduced its greenhouse gas emissions by 10.1% and saved nearly 66 million kWh of electricity through server centralization and virtualization.

32 [NO. 10] Burt's Bees tackles the tough issue of behavioral change by partially tying employee pay to reductions in energy use, water consumption and waste.

32 [NO. 11] Marriott lowered the cost of air conditioning in its data center by asking security guards to monitor thermostats.

34 [NO. 12] Austin Energy moved to a virtual environment, running 150 physical servers instead of 600. It's also using multicore CPU technology and energy-saving deduplication and compression tools.

35 OPINION: The EPA's Michael Zatz calls on data center operators to take a leadership role in addressing climate change. The agency's energy-performance rating for data centers – expected early next year – should help.

ONLINE

computerworld.com/topgreen09

How Green Is Your Company? Take our green-IT quiz and read about ways to get greener.

The Top 12 Green-IT Vendors. Read about vendors and data center suppliers that are working to make their IT operations and equipment more energy effcient.

'Green' Your IT Department. Your data center might be the big power hog, but the energy consumed by individuals quickly adds up, too, say authors Michael Wallace and Larry Webber.

Lean Means Green. The quality-control concept of "lean" shares much in common with "green," say Wallace and Webber.

Editor's Picks: Check out this collection of green-IT *Computerworld* articles to find technical information, expert advice and success stories.

ILLUSTRATION BY STEPHEN WEBSTER

■ NEWS

4 Microsoft releases eight security updates to patch **23 flaws,** while **Oracle** issues a quarterly update with **43 fixes.** | Mainstream support ends for **Windows XP.**

6 Amazon.com says a glitch that removed sales rankings for gay- and lesbian-themed books was caused by a **cataloging error.** | Stronger **privacy rules** may slow adoption of **e-health systems,** a study finds.

7 NASA is trying to figure out what's causing the **Mars rover Spirit** to have **technology problems.**

8 Data-Loading Pedal Gets Put to the Metal. Vendors are touting ultrafast times for loading info into data warehouses, but there may not be a big need for that kind of speed.

11 Q&A: New Symantec CEO Says Security Sells in Hard Times. Symantec's Enrique Salem talks about the economy, his vision for the company and the IT security threats that lie ahead.

12 Android Faces Fight for Users, Despite Update. Even though Google plans to ship a new version of Android, phones based on the mobile OS are unlikely to leapfrog rivals such as the iPhone on functionality.

■ DEPARTMENTS AND OPINIONS

2 Editor's Note: Don Tennant finds the Obama administration's change in Cuba policy vacuous.

14 The Grill: Tech provocateur **Virgil Griffith** talks about machines with feelings, and exposing the wicked.

18 Paul M. Ingevaldson says that users who are ignorant of IT's real role should be trained, not blamed.

36 Career Watch: Some people think they'll never be able to retire.

40 Frankly Speaking: Frank Hayes examines the role IT can play in quelling PR calamities like the one Amazon.com experienced.

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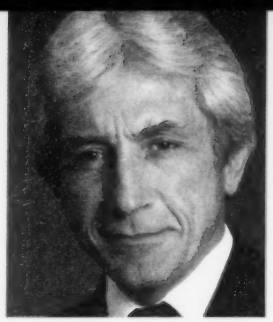
■ EDITOR'S NOTE

Don Tennant

Vacuous Steps



WHEN I WAS WORKING as a research analyst at the National Security Agency in the mid-'80s, one of my assignments was to study the economic situations in Nicaragua and Cuba. Nicaragua was, by far, the sexier part of the assignment, because the chief "customer" for my reports on that country was National Security Council member Oliver North.

As you may recall, North was the mastermind behind the Iran-Contra scandal, in which proceeds from back-channel arms sales to Iran were illegally diverted to support a rebel group in Nicaragua. To this day, I have no idea how North used the information in my reports to further his goals, but I know it was valued. The effort at one point brought me inside the Situation Room in the White House, where I interviewed for a posting. I didn't get the job, but it was just as well. Not long after that, the Iran-Contra mess blew up, and I most likely would have ended up working beside Fawn Hall, shredding incriminating documents.

Cuba was an entirely different story. I never had any clue who was reading my reports on it, but I always pictured a mousy, self-absorbed crank closeted in a little room, having next to no contact with the outside world. I never saw any indication that the information was used for any purpose, constructive or otherwise, because nothing in our relationship with Cuba ever changed. It all seemed like a colossal waste of time.

Now, a quarter of a century later, I find myself picturing the same old crank, muttering to himself about the reports he's getting from my successors, completely oblivious to the changes the world has undergone over the past 25 years. I wish I could say I'm encouraged by the Obama administration's announcement last week that it was "reaching out to the Cuban people," taking steps such as authorizing U.S. telecom providers to forge service agreements with their counterparts in Cuba. Sadly, I'm not.

As *Computerworld*'s Matt Hamblen reported last week, U.S. carriers are hardly clamoring for a piece of the action, because there's far too much uncertainty clouding the relationship between the U.S. and Cuba. And even if they were interested, there's no reason to believe that the Cuban authorities would allow any such agreements. When you consider all that, the administration's gesture seems vacuous at best.

■ It's ludicrous to preach to Cuba about opening itself up while we maintain a trade embargo against it.

According to *The Wall Street Journal*, "The White House cast the moves as a way to challenge the Cuban government to open itself up to the outside world." No doubt, Cuba's policies with respect to telecommunications and the Internet have deprived its citizens of access to information that should be freely available. But we in this country need to come to grips with how ludicrous it is for us to preach to Cuba about opening itself up to the outside world while we insist on maintaining a choking trade embargo against it.

The fact is, Cuba *has* opened itself up to the outside world in many ways. The U.S. stands practically alone in keeping the door closed to diplomatic relations and meaningful commercial engagement, so lecturing Cuba on openness will get us nowhere.

Nor will other examples of the vacuousness that continues to be advanced in place of bold, decisive U.S. action on Cuba. Since 2001, the U.S. Agency for International Development has given millions of dollars to the University of Miami's Institute for Cuban and Cuban-American Studies to fund its Cuba Transition Project. According to USAID, the project focuses on "identifying and assessing the challenges to a democratic transition in a post-Castro Cuba." Imagine how much more effectively many of our allies are pursuing similar efforts from their embassies in Havana.

We can no longer allow our policies to be dictated from within a closet of self-absorption. Diplomacy and commercial engagement work a lot better than conflict and pretense. Just look at Nicaragua. ■

Don Tennant *is* Computerworld's *senior editor-at-large. You can contact him at don_tennant@computerworld.com, visit his blog at* http://blogs.computerworld.com/tennant, *and follow him on Twitter at* http://twitter.com/dontennant.

RESPONSES TO:

Microsoft's 'Apple Tax' Claims Are 'Stupid,' Counters Analyst

April 10, 2009

I don't think anyone is arguing the fact that a Mac is a premium product and as such you pay a bit more for it. The argument is over how much that premium is. Microsoft's $3,500 claim is just plain ridiculous.
■ **Submitted by:** *Anonymous*

The white paper is perfectly true. I've had many discussions about this topic with Apple fans through the years. Trust me, boys, Apple has always been more expensive for no good reason. Leave it at that.
■ **Submitted by:** *Anonymous*

I own a database development company, where we have both PCs and Macs. While the Macs look better, to say their performance is any better than of a PC that costs two-thirds as much would be a misstatement.

If you like Apple and can afford their premium, that's great. But to deny that the premium exists is just plain wrong.
■ **Submitted by:** *Anonymous*

When Apple makes an ad, it is hailed as "witty" and "smart." When Microsoft does the same thing, it is "stupid" and "unfair."
■ **Submitted by:** *Manas*

I work with both. Most of us (certainly in my workgroup, probably elsewhere) who have a choice prefer Macs. Better ease of use/user experience, still better reliability, still little or no virus issues, and nothing ever approaching the 28% failure rate of new laptops experienced by a big-name/low-cost competitor a few years back.

The greatest satisfaction in dealing with an inferior tool is throwing it away (and getting something that's worth working with). This applies to technology as well as my previous life in construction.
■ **Submitted by:** *Work*

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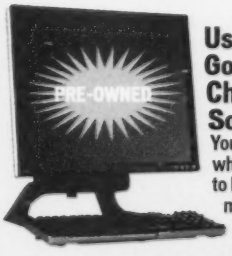

Used IT Gear: Good Stuff Cheap – Sometimes

You can save half of what it would cost to buy new equipment, but you need to consider technology obsolescence, warranties, lack of documentation and availability of replacement parts.

Three Partition Managers Take on Vista's Built-in Tools

REVIEW: Partitioning your hard drive can be useful when trying out a new operating system or managing several terabytes of data.

The Worst OSs Of All Time

Steven J. Vaughan-Nichols lists 10 real stinkers.

Windows 7 Tips, Tricks and Tweaks

Are you testing the Windows 7 beta? We've got a handful of ways to get around the interface and make it act the way you want.

Beyond 'Just Say No'

Employees want to use their shiny new smartphones with your network. Work with them, says Michael Gartenberg, but establish strict criteria.

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■ **EDITORIAL**

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News Digest

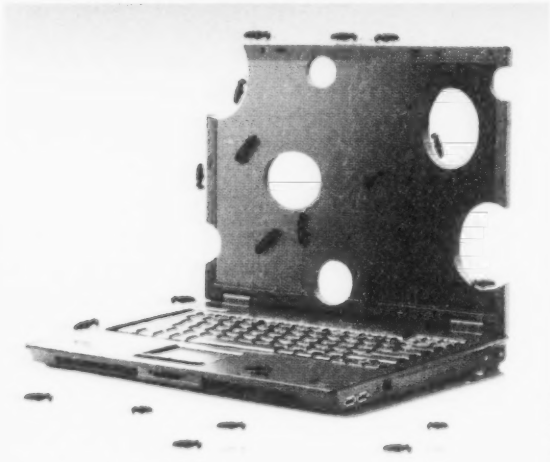
COMPUTERWORLD.COM

THE WEEK AHEAD

MONDAY: IBM plans to report its first-quarter financial results. AMD is scheduled to file its Q1 numbers on Tuesday.

TUESDAY: The security-focused RSA Conference 2009 opens in San Francisco. Also starting today is the annual MySQL user conference and expo, in Santa Clara, Calif.

THURSDAY: Microsoft's and EMC's quarterly earnings reports are due. Apple and EMC subsidiary VMware are scheduled to report their results on Wednesday.



SECURITY

Microsoft, Oracle Issue Patches for Slew of Holes

Microsoft Corp. last week released eight security updates that patch 23 vulnerabilities in Windows, Internet Explorer, Excel and other software products in the company's portfolio.

Analysts noted that even more dangerous than the unusually large number of patches is the fact that nearly half of them fix flaws that have already been or can be exploited by hackers.

"What really caught our eye is the large number of exploits that are already available," said Wolfgang Kandek, chief technology officer at Qualys Inc., a provider of on-demand security tools. "Out of the 23, there are 10 exploits or [flaws] that have proof of concept."

"You could call this a spring cleaning," said Eric Schultze, CTO at Shavlik Technologies LLC, a network security vendor. "Microsoft jumped on a couple of zero-days, including Excel from February and WordPad from last December. It's nice to see those taken care of."

Kandek and Amol Sarwate, manager of the vulnerability research lab at Qualys, recommended that users first patch the 10 flaws that have known exploits by applying the "critical" updates for Excel and WordPad, and an "important" patch designed to fix the so-called token-kidnapping issues in Windows. "Critical" and "important" are the top two rankings in Microsoft's four-step threat-scoring system.

Meanwhile, Oracle Corp. last week released 43 security fixes for a range of products, including its flagship database and the Oracle Application Server. The patches also fix flaws in its E-Business Suite and PeopleSoft Enterprise applications, and its WebLogic application server.

Oracle said that 16 of the patches are for various database versions. The most severe vulnerability, which affects Versions 9.2.0.8 and 9.2.0.8DV, "can potentially allow an attacker to gain full control of a vulnerable server," according to a post on Oracle's global product security blog.

The update also includes patches for eight vulnerabilities in Oracle's WebLogic and AquaLogic products, including JRockit, and for WebLogic Server plug-ins for Apache and IIS Web servers, according to the blog post.

— Gregg Keizer, with Chris Kanaracus of the IDG News Service

OPERATING SYSTEMS

XP Shifts To Reduced Support

As expected, Microsoft Corp. last week moved Windows XP out of its mainstream support program and into a more limited plan.

Under Microsoft's policy, mainstream support delivers free fixes – including security patches and other bug fixes – to everyone. The extended support program now covering XP provides all users with security updates, but nonsecurity hot fixes are provided only to companies that have signed Microsoft support contracts.

The shifting of XP into the first phase of support retirement comes despite the continuing popularity of the seven-year-old operating system. In a recent survey by Dimensional Research Inc., 97% of the 1,100 IT professionals queried said their companies are still running XP, and 72% voiced concern about the cost of migrating to Windows 7.

– GREGG KEIZER

Microsoft will offer free security updates for Windows XP until April 8, 2014.

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INTERNET BUSINESS

'Cataloging Error' Lands Amazon in Hot Water

AMAZON.COM INC. blamed a glitch that knocked gay and lesbian-themed books out of its main product search engine on a "ham-fisted cataloging error," while disputing a hacker's claim that he had caused the problem by exploiting a flaw on Amazon's Web site.

The issue was first publicized in an April 12 blog post by author Mark Probst, who said the Amazon sales rankings had disappeared for a novel he wrote as well as for other gay-themed books.

Probst's post set off a firestorm in the blogosphere and on Twitter. Amazon was accused of anti-gay censorship, and the fire was fueled by Probst's inclusion of a response he received from an Amazon customer service representative. The message said that the online retailer excluded "adult material" from some searches and best-seller lists "in consideration of our entire customer base."

Last Monday, though, Amazon said that the exclusions were caused by a cataloging mistake and that a total of 57,310 books were affected "in a number of broad categories such as Health, Mind & Body, Reproductive & Sexual Medicine and Erotica."

But that didn't defuse the situation. Some bloggers complained that Amazon's statement didn't adequately explain what had happened. Meanwhile, a hacker who uses the name "Weev" claimed credit for the glitch, saying in a blog post that he had taken advantage of a Web programming error on the Amazon.com site.

He also said he had enlisted "people who run some extremely high traffic websites" and "third worlders" to help him game Amazon's ranking system by automatically filing complaints about gay and lesbian books.

Amazon insisted that Weev's claims were false, and other bloggers tried to debunk them as well. One, a former Amazon worker named Mike Daisey, said in an interview that a friend at the company told him an employee working on Amazon's French Web site had mistagged a number of keyword categories, including the "Gay and Lesbian" one, as pornographic. The error then was "propagated everywhere," Daisey said.

— Robert McMillan, IDG News Service

Short Takes

After Intel Corp. reported that its first-quarter profits plunged 55% to $647 million and sales declined 26% to $7.1 million compared with last year, CEO Paul Otellini suggested that PC sales have bottomed out and that "the industry is returning to normal seasonal patterns."

Joseph Nacchio, the former CEO of Qwest Communications International Inc., reported to prison to serve his six-year sentence after Supreme Court Justice Stephen Breyer denied his request for bail and a temporary stay. Nacchio was convicted last year of 19 counts of insider trading.

Microsoft Corp. said it plans to release one public beta of the next version of its Office suite, dubbed Office 2010, before it becomes generally available in the second half of next year.

NetApp Inc. has agreed to pay $128 million to settle General Services Administration charges that it failed to offer U.S. government customers the same discounts it gave to commercial customers.

PRIVACY

Privacy Rules May Slow E-health Use, Study Says

TWO RESEARCHERS from MIT and the University of Virginia claim in a study publicly released last week that increased efforts to protect the privacy of health care data could hamper the deployment of electronic medical records systems.

The researchers said EMR adoption levels are often lowest in states with strong data-privacy regulations. Strict rules can make it harder and more costly for hospitals to exchange patient data, thereby reducing the value of EMR systems, the study found.

The study looked at EMR usage in 19 states over a 10-year period. It suggests that a trade-off has to be made between boosting adoption of the technology and strengthening privacy laws, said Catherine Tucker, an assistant professor of marketing at MIT's Sloan School of Management and one of the report's authors.

> **"Policymakers are going to have to choose how much EMR adoption they want and at what cost to patient privacy."**
> CATHERINE TUCKER, REPORT'S CO-AUTHOR

But the study was slammed by privacy advocates, who are already concerned about the accelerated move to a nationwide EMR system that's being pushed by President Barack Obama.

Suggesting that privacy rules could stall EMR rollouts is "preposterous," said Deborah Peel, who chairs the Patient Privacy Rights Foundation. "There are many reasons why there is low adoption, but privacy is not one of them."

– JAIKUMAR VIJAYAN

HARDWARE

NASA: Mars Rover Tech Issues May Be Age-Related

MAAS DIGITAL LLC FOR CORNELL UNIVERSITY AND NASA/JPL

THOUGH NASA engineers are still working to figure out what is wrong with one of its two Mars Exploration Rovers, officials are speculating that the robotic machine may be starting to suffer from age-related technology issues.

The U.S. space agency last week said that the Mars rover Spirit had apparently rebooted its computer twice, unprompted from Earth. NASA engineers also determined that the rover had failed three times to send its regularly scheduled downlink of information to Earth, according to John Callas, NASA's project manager for Spirit and its companion Mars rover, dubbed Opportunity.

Callas said last week that NASA engineers are still working to determine the specific cause of the breakdowns. "If it just needs to be reset, we can do that," he said. "If something is permanently broken, that's a bigger issue. It's still very early in the analysis."

Both Spirit, which had similar problems in January, and Opportunity, which has remained relatively healthy, have been working on the Martian surface for five years, far longer than the three months NASA initially expected them to last.

Callas listed several possible causes for the problems, including old age. "It could be that some memory cells were corrupted and we need to refresh them," he said. "It could be a transient thing, like when your computer crashes and you don't know why. It could be that it's getting older and more temperamental. We're obviously aware of the fact that we have an old rover here."

Callas noted that when things have broken on the rovers in the past, "we've been very innovative at finding a work-around."

— *Sharon Gaudin*

BETWEEN THE LINES *By John Klossner*

BENCHMARKS LAST WEEK

The U.S. Department of Justice asked a judge to extend the provisions of the Microsoft Corp. antitrust settlement by 18 months beyond their scheduled expiration date in November.

Intel Corp. said it has started sending samples of its upcoming 32-nanometer Westmere processors to PC makers. Volume shipments are due later this year.

NINE YEARS AGO: A 15-year-old hacker from Montreal known as MafiaBoy was charged with "data mischief" in connection with denial-of-service attacks against various Web sites.

Global Dispatches

Infosys Sees Slumping Sales

BANGALORE, India – Infosys Technologies Ltd. is projecting a decrease in annual revenue – its first ever – for its fiscal year ending March 31, 2010. The company said it expects the fiscal 2010 revenue decline to range from 3.1% to 6.7%, or up to $4.52 billion (U.S.).

At the same time, the outsourcing firm said it plans to hire some 18,000 new employees during the fiscal year.

The company said business is dropping off as customers either postpone outsourcing plans or demand lower prices for new contracts.

Infosys reported that its revenue decreased 1.8% to $1.12 billion in its fourth quarter, which ended March 31, and that its revenue for fiscal 2009 rose 11.7% to $4.7 billion.

John Ribeiro,
IDG News Service

Trade Group Joins EC in Microsoft Case

BRUSSELS – The European Committee for Interoperable Systems, a trade group whose members include Oracle, Sun Microsystems and IBM, last week joined as an interested third party in the European Commission's latest antitrust battle with Microsoft Corp.

The EC in January filed a complaint alleging that Microsoft distorted competition by attaching Internet Explorer to Windows. Google Inc. and Mozilla Corp. had joined as third parties previously.

Microsoft has until tomorrow to reply to the complaint, either with a written response or a request for a hearing on the matter.

Paul Meller,
IDG News Service

BRIEFLY NOTED

Tech Mahindra Ltd., a Pune, India-based outsourcing firm, made the winning bid for a majority stake in troubled Satyam Computer Services Ltd. Tech Mahindra will pay 17.6 billion Indian rupees ($353 million U.S.) for a 31% stake in Satyam, and it will make a public offer to other Satyam shareholders to buy another 20% of the company.

John Ribeiro,
IDG News Service

INTERNET BUSINESS

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Last Monday, though, Amazon said that the exclusions were caused by a cataloging mistake and that a total of 57,310 books were affected "in a number of broad categories such as Health, Mind & Body, Reproductive & Sexual Medicine and Erotica."

But that didn't defuse the situation. Some bloggers complained that Amazon's statement didn't adequately explain what had happened. Meanwhile, a hacker who uses the name "Weev" claimed credit for the glitch, saying in a blog post that he had taken advantage of a Web programming error on the Amazon.com site.

He also said he had enlisted "people who run some extremely high traffic websites" and "third worlders" to help him game Amazon's ranking system by automatically filing complaints about gay and lesbian books.

Amazon insisted that Weev's claims were false, and other bloggers tried to debunk them as well. One, a former Amazon worker named Mike Daisey, said in an interview that a friend at the company told him an employee working on Amazon's French Web site had mistagged a number of keyword categories, including the "Gay and Lesbian" one, as pornographic. The error then was "propagated everywhere," Daisey said.

— Robert McMillan, IDG News Service

Short Takes

- After Intel Corp. reported that its first-quarter profits plunged 55% to $647 million and sales declined 26% to $7.1 million compared with last year, CEO Paul Otellini suggested that PC sales have bottomed out and that "the industry is returning to normal seasonal patterns."
- Joseph Nacchio, the former CEO of Qwest Communications International Inc., reported to prison to serve his six-year sentence after Supreme Court Justice Stephen Breyer denied his request for bail and a temporary stay. Nacchio was convicted last year of 19 counts of insider trading.
- Microsoft Corp. said it plans to release one public beta of the next version of its Office suite, dubbed Office 2010, before it becomes generally available in the second half of next year.
- NetApp Inc. has agreed to pay $128 million to settle General Services Administration charges that it failed to offer U.S. government customers the same discounts it gave to commercial customers.

PRIVACY

Privacy Rules May Slow E-health Use, Study Says

TWO RESEARCHERS from MIT and the University of Virginia claim in a study publicly released last week that increased efforts to protect the privacy of health care data could hamper the deployment of electronic medical records systems.

The researchers said EMR adoption levels are often lowest in states with strong data-privacy regulations. Strict rules can make it harder and more costly for hospitals to exchange patient data, thereby reducing the value of EMR systems, the study found.

The study looked at EMR usage in 19 states over a 10-year period. It suggests that a trade-off has to be made between boosting adoption of the technology and strengthening privacy laws, said Catherine Tucker, an assistant professor of marketing at MIT's Sloan School of Management and one of the report's authors.

> **"Policymakers are going to have to choose how much EMR adoption they want and at what cost to patient privacy."**
> CATHERINE TUCKER, REPORT'S CO-AUTHOR

But the study was slammed by privacy advocates, who are already concerned about the accelerated move to a nationwide EMR system that's being pushed by President Barack Obama.

Suggesting that privacy rules could stall EMR rollouts is "preposterous," said Deborah Peel, who chairs the Patient Privacy Rights Foundation. "There are many reasons why there is low adoption, but privacy is not one of them."

– JAIKUMAR VIJAYAN

HARDWARE

NASA: Mars Rover Tech Issues May Be Age-Related

THOUGH NASA engineers are still working to figure out what is wrong with one of its two Mars Exploration Rovers, officials are speculating that the robotic machine may be starting to suffer from age-related technology issues.

The U.S. space agency last week said that the Mars rover Spirit had apparently rebooted its computer twice, unprompted from Earth. NASA engineers also determined that the rover had failed three times to send its regularly scheduled downlink of information to Earth, according to John Callas, NASA's project manager for Spirit and its companion Mars rover, dubbed Opportunity.

Callas said last week that NASA engineers are still working to determine the specific cause of the breakdowns. "If it just needs to be reset, we can do that," he said. "If something is permanently broken, that's a bigger issue. It's still very early in the analysis."

Both Spirit, which had similar problems in January, and Opportunity, which has remained relatively healthy, have been working on the Martian surface for five years, far longer than the three months NASA initially expected them to last.

Callas listed several possible causes for the problems, including old age. "It could be that some memory cells were corrupted and we need to refresh them," he said. "It could be a transient thing, like when your computer crashes and you don't know why. It could be that it's getting older and more temperamental. We're obviously aware of the fact that we have an old rover here."

Callas noted that when things have broken on the rovers in the past, "we've been very innovative at finding a work-around."

— Sharon Gaudin

BETWEEN THE LINES *By John Klossner*

BENCHMARKS LAST WEEK

The U.S. Department of Justice asked a judge to extend the provisions of the Microsoft Corp. antitrust settlement by 18 months beyond their scheduled expiration date in November.

Intel Corp. said it has started sending samples of its upcoming 32-nanometer Westmere processors to PC makers. Volume shipments are due later this year.

NINE YEARS AGO: A 15-year-old hacker from Montreal known as MafiaBoy was charged with "data mischief" in connection with denial-of-service attacks against various Web sites.

Global Dispatches

Infosys Sees Slumping Sales

BANGALORE, India – Infosys Technologies Ltd. is projecting a decrease in annual revenue – its first ever – for its fiscal year ending March 31, 2010. The company said it expects the fiscal 2010 revenue decline to range from 3.1% to 6.7%, or up to $4.52 billion (U.S.).

At the same time, the outsourcing firm said it plans to hire some 18,000 new employees during the fiscal year.

The company said business is dropping off as customers either postpone outsourcing plans or demand lower prices for new contracts.

Infosys reported that its revenue decreased 1.8% to $1.12 billion in its fourth quarter, which ended March 31, and that its revenue for fiscal 2009 rose 11.7% to $4.7 billion.

John Ribeiro, IDG News Service

Trade Group Joins EC in Microsoft Case

BRUSSELS – The European Committee for Interoperable Systems, a trade group whose members include Oracle, Sun Microsystems and IBM, last week joined as an interested third party in the European Commission's latest antitrust battle with Microsoft Corp.

The EC in January filed a complaint alleging that Microsoft distorted competition by attaching Internet Explorer to Windows. Google Inc. and Mozilla Corp. had joined as third parties previously.

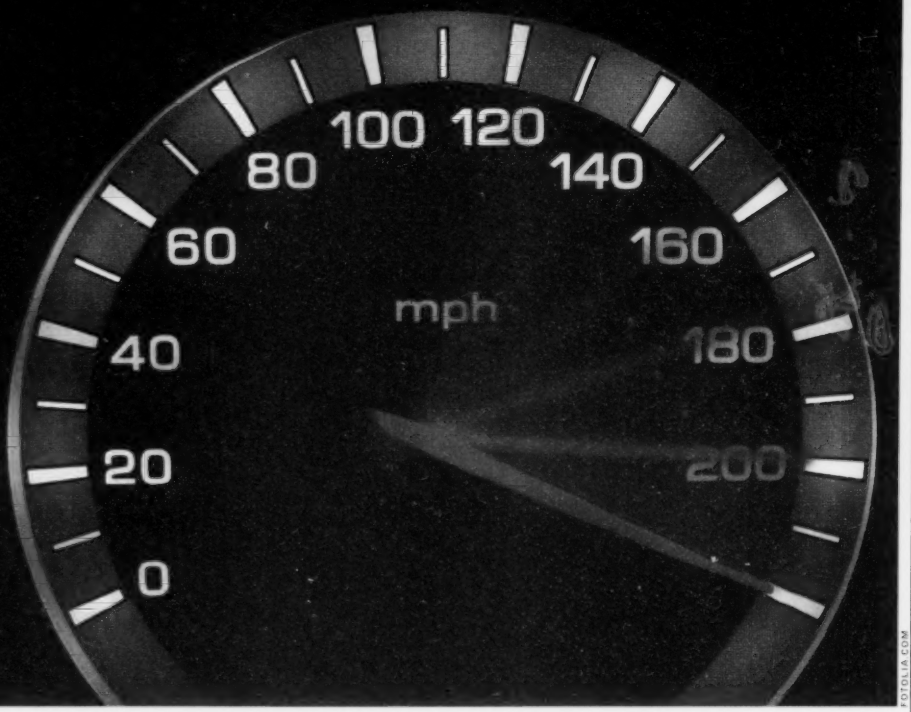
Microsoft has until tomorrow to reply to the complaint, either with a written response or a request for a hearing on the matter.

Paul Meller, IDG News Service

BRIEFLY NOTED

Tech Mahindra Ltd., a Pune, India-based outsourcing firm, made the winning bid for a majority stake in troubled Satyam Computer Services Ltd. Tech Mahindra will pay 17.6 billion Indian rupees ($353 million U.S.) for a 31% stake in Satyam, and it will make a public offer to other Satyam shareholders to buy another 20% of the company.

John Ribeiro, IDG News Service



FOTOLIA.COM

Data-Loading Pedal Gets Put To the Metal

Vendors are touting ultrafast times for loading information into data warehouses. But is there really a big need for that kind of speed? **By Eric Lai**

ONE OF the more prosaic parts of data warehousing is getting information into a warehouse in the first place. Vendors that sell data-loading tools have long operated in the shadows of the business intelligence market, with little pizazz or glory.

Even in the isolated world of extract, transform and load (ETL) software, the focus has traditionally been more on the problem of cleansing and modifying data to prepare it for analytical uses. Data loading seemed to be an afterthought — a piece of cake — in comparison.

But that's changing as BI and analytics become more of a near-real-time affair at many companies. In addition, the biggest BI users now operate data warehouses larger than a petabyte in size and need to import huge amounts of data into them. For instance, decision-support database vendor Teradata Corp. says that eBay Inc. loads 50TB of online auction and purchase data on a daily basis.

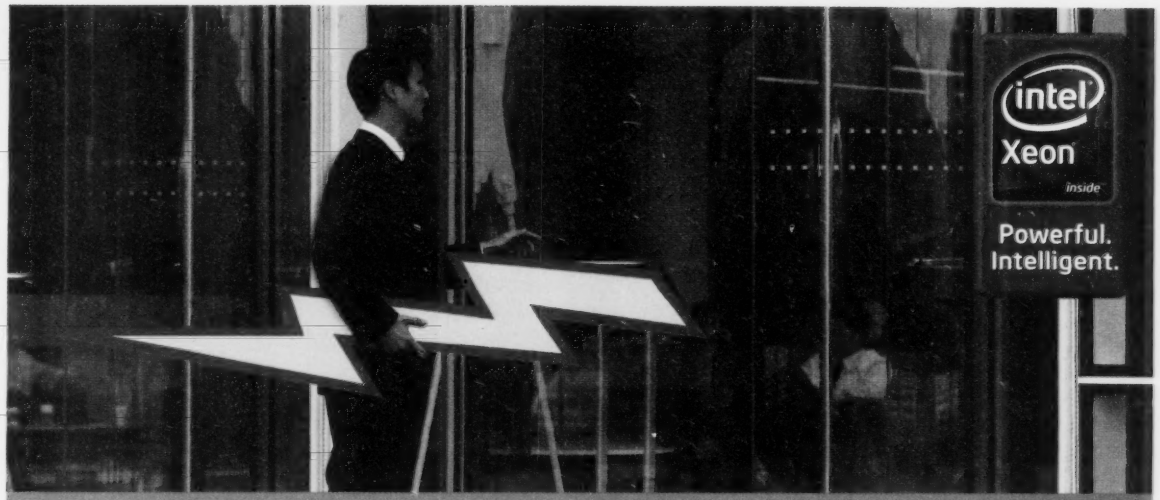
Over the past few months, several start-ups and relatively unknown vendors have tried to take advantage of such needs by touting screaming-fast data-loading speeds that they claim to have achieved either in the lab or with users in the field.

Database start-up Greenplum Inc. said customer Fox Interactive Media Inc. routinely loads 2TB of Web usage data into its data warehouse in half an hour. Meanwhile, rival Aster Data Systems Inc. claimed that its nCluster technology supports load speeds of up to 3.6TB per hour.

Not to be outdone, Expressor Software Corp., an ETL start-up offering so-called semantic data integration tools, said in-house tests show that its data processing engine can scale to a rate of nearly 11TB per hour.

Even Syncsort Inc., a 41-year-old company that began as a mainframe software vendor, has gotten into the act. Syncsort said that in lab tests, its data integration software loaded 5.4TB of data into a warehouse built around Vertica Systems

Continued on page 10



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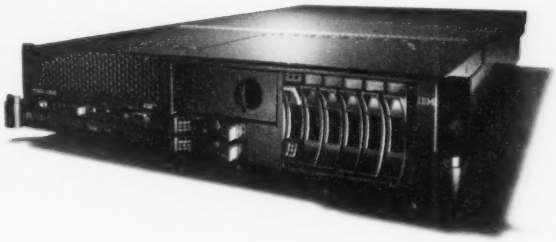

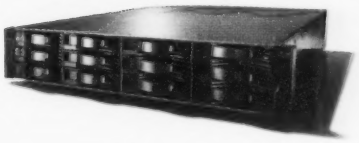

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Continued from page 8

Inc.'s column-based database in less than an hour.

If Syncsort and the other vendors are actually achieving those kinds of load rates, that's "really impressive," said James Kobielus, an analyst at Forrester Research Inc. "Anything above a terabyte per hour is good."

And what about more-established vendors? Two years ago, SAS Institute Inc. and Sun Microsystems Inc. demonstrated a SAS data warehouse running on Sun hardware and StorageTek disk arrays that could push through 1.7TB of data in 17 minutes — the equivalent of just under 6TB per hour.

But other big-name vendors have posted performance benchmarks that fall short of the load rates claimed by the upstarts. Last fall, for instance, Oracle Corp. and Hewlett-Packard Co. said their joint BI-oriented HP Oracle Database Machine could load up to 1TB per hour. And Microsoft Corp. said early last year that the data integration software built into SQL Server 2008 had loaded at a rate of 2.36TB per hour.

WHO NEEDS IT?

But do customers really need the ultrafast loading speeds that vendors have been touting recently?

Not surprisingly, John Russell, Expressor's chief scientist, contends that many do. "Every financial firm we talk with says they want . . . something close to 1TB per day," he said. "For clickstream data [from Web sites], those figures could be as high as 200 billion clicks, or nearly 24TB a day."

A longtime data warehouse architect for Fortune 100 companies, Russell said he co-founded Expressor partly "out of the frustration I felt when dealing with the performance limitations and bottlenecks of those high-end [data integration] tools."

Kobielus said load rates of multiple terabytes per hour "are becoming the norm" for warehouses that store large volumes of event-based data, such as Web clickstream info or the call-detail records generated by telecommunications systems.

They can also be useful when companies need to populate new warehouses or data marts with historical information for quick-turnaround data-mining projects, Kobielus said.

But such uses are outside the mainstream of enterprise data warehousing, he added. According to Kobielus, most warehouses still store less than 10TB of data and only need "gigabytes per hour" load rates.

Independent database analyst Curt Monash made a similar point last December in a blog post about the performance claim made by Syncsort and Vertica. Monash acknowledged that data loading "is an increasingly nontrivial subject." But in general, he contended, commercial databases "will provide most users with much more load speed than they actually need."

Peter Schmidt is director of business intelligence at Centro LLC, a 100-employee online advertising services firm in Chicago. Centro has modest data-loading needs, but Schmidt has worked in BI for more than 20 years and has held jobs at companies with much greater storage needs, such as United Air Lines Inc. and OfficeMax Inc.

So, could Schmidt ever imagine needing an ETL tool that could load 4TB or more per hour? "No, not to that level," he said. And, he noted, "the performance tests out there are never apples-to-apples [with real-world applications]. So what if you can bring in 1TB per hour but aren't transforming anything, just moving data from Point A to Point B?"

Even Teradata is skeptical about how broad the demand is for high-end loading tools. "Extreme data-load rates are irrelevant to most customer environments," said Randy Lea, the vendor's vice president of products and services.

Most data warehousing systems, including Teradata's, can be configured to load multiple terabytes of data per hour, Lea said. But he cautioned that such systems are at risk of becoming unbalanced and performing badly in other areas, such as data reads and queries.

In addition, he said, "the current crop of 'gee whiz' data-loading boasts have little value because there are no benchmark standards."

The latter issue is now being addressed by the Transaction Processing Performance Council, a benchmark development group known as the TPC. It formed an ETL benchmark subcommittee last November, and an initial meeting is scheduled for this month. That may at least enable BI users to see how vendors really stack up against each other when it comes to pressing the load pedal to the floor. ■

Loading Speeds Not Just a High-End Issue

Small organizations may not have a place in the rarefied realm of terabyte-per-hour data-loading rates. But they have load-speed issues of their own to deal with.

For instance, Mamasource, a Corte Madera, Calif.-based company that runs an online community for mothers, recently moved its 300GB MySQL data warehouse to a specialized warehousing appliance from Kickfire Inc.

Mamasource adds about 1GB of clickstream data to the warehouse daily. That process previously took four hours – at a rate of just 250MB per hour. But with the Kickfire upgrade, the loads can be done in less than an hour, said Steve Keptchel, Mamasource's director of research and analytics.

The University of Pennsylvania Health System has a mere 5GB in its Oracle-based data warehouse now. Its current loading rate is fast enough, said Brian Wells, chief technology officer at the Philadelphia-based health system. But Wells expects that over time, he will have to add more processing capacity to his Oracle server and to the systems that run IBM's ETL tools.

That's partly because of an expected increase in data volume. In addition, Wells said health system officials want to ensure that data is being made available in the warehouse no later than two days after it is created.

– ERIC LAI

New Symantec CEO Says Security Sells in Hard Times

Salem expects SaaS to account for 20% of the company's business within five years

ORLANDO

Enrique Salem, *who took the reins of Symantec Corp. as president and CEO this month, sat down with* Computerworld's *Scot Finnie and Lucas Mearian at the Storage Networking World conference here to talk about how his company is dealing with the recession and his vision of the future of Symantec and the technology business.*

How is the economy affecting demand for security products and services? Security is something you need all the time, independent of the economic environment. People continue to buy security because they need to protect their information. So we think security continues to do as well or better than other sectors in tech spending.

Does that make your security business recession-proof? I don't want to go that far, but I will say that security will absolutely do better in a recession.

What do you see as the most important trends in IT this year? Virtualization continues to be a hot topic. Another trend is software as a service. We absolutely believe that people are going to think about their core competencies: What are the things they have to be good at, and what can they allow other third parties to take advantage of?

Another important trend we see is the "consumerization" of IT. People coming to work every day are bringing new devices. IT has to start thinking about how to embrace these new technologies — everything from your iPhone to social networking technologies.

What are Symantec's plans for cloud computing and software as a service? We define them very specifically. Cloud computing is renting infrastructure — MIPS storage and so forth. Software as a service is delivering an application into an environment. Our focus is more on software as a service. How do we help our customers do a whole range of things — from filtering e-mail, to archiving, to encryption — that has to be delivered as a service? We expect that 20% of our business over the next five years will be delivered as a service.

What are Symantec's biggest challenges? We went from being a $600 million company in 1999 to a $6 billion company today through about 30 acquisitions. We need to continue to drive the integration of those technologies. Our customers don't want point products. We need to do a better job of continuing to integrate our technologies.

What are the biggest threats facing IT over the next five years? It's absolutely [theft of] confidential information. Most security professionals have known for a long time that the real threat is insiders. It's people who have credentials to access confidential information.

Do you plan to fully integrate NetBackup so it can handle disk arrays, clusters, virtual environments and tape backups? Different types of storage media are critical for us, so we will continue to extend the types of targets [that] data can be backed up to. Expect to see Symantec invest in more types of media.

How is Symantec addressing thin provisioning and the larger issue of reallocating storage once thin-provisioned volumes have been moved off to tape or secondary disk? We created in Storage Foundation smart-move functionality to move the utilized blocks more efficiently without any knowledge to the applications. [And] we created what we call the thin reclamation API. As applications delete information, you want to make sure that the arrays know that storage is available. ■

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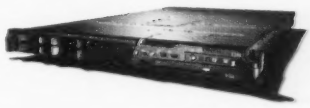

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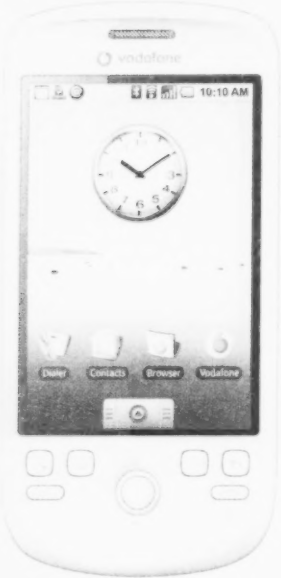
Android Faces Fight for Users, Despite Update



Google will soon reinforce the mobile OS with new features. But Android-based phones likely won't leapfrog rivals such as the iPhone.

By Matt Hamblen

AN ANDROID update that Google Inc. plans to release soon will include new features sought by users and developers since the mobile operating system became available last year. But even so, it doesn't appear that Android-based phones will outdo rivals like the iPhone on functionality.

Observers are questioning how well the Android technology will fare against Apple Inc.'s device, which itself is due to be augmented by an iPhone 3.0 software update this summer, and other smartphones such as Palm Inc.'s new Palm Pre.

"Google and the Android folks have a real challenge in the market on their hands," said Jack Gold, an analyst at J.Gold Associates LLC in Northboro, Mass. "They basically have to become more than equivalent to what's already out there."

Google last week provided an early look at the software developer's kit for Version 1.5 of Android, which adds support for touch-based soft keyboards, live folders, speech recognition and other features. The full SDK is expected to be released later this month, and Google said that Android 1.5 will be offered as an over-the-air upgrade shortly thereafter.

Gold predicted that the near-simultaneous releases of Android 1.5, iPhone 3.0 and the Palm Pre will ignite an unprecedented battle for market share among smartphone vendors. But he and other analysts said that some of what's coming in Android 1.5 is widely available in rival smartphones now. "Voice command and touch [capabilities] are critical for Android phones, because almost everybody else has that already," Gold said.

Despite the buzz generated by Android, the version of the open-source technology that debuted last fall on the T-Mobile G1 phone has the feel of a beta release.

Android 1.5 will provide users with "a lot of fixes that probably should have been in the first release," said Gartner Inc. analyst Ken Dulaney. "Overall, it's a nice improvement, a necessary upgrade — but a bit late."

The update also isn't likely to do much to spur enterprise interest in Android-based phones. BlackBerries and Windows Mobile devices remain the favored handhelds among IT managers because of their security and management capabilities.

> **"Google and the Android folks have a real challenge in the market on their hands."**
> JACK GOLD, ANALYST, J.GOLD ASSOCIATES LLC

In comparison, Android has "almost no appeal with the corporate market," Gold said. Of 350 IT professionals that his firm surveyed last fall, only 4% said that they expected to deploy Android phones within the next three years.

But that doesn't mean IT departments can just ignore Android. End users who buy Android phones for personal use will no doubt want to tap into corporate applications as well, as iPhone users have done.

IDC analyst Sean Ryan doesn't expect companies to standardize on Android as a mobile platform. But, he said, "we've seen a real trend of people in companies bringing in their own devices, and IT is having to deal with the influx."

Jim Laval, corporate IT manager at Baptist Healthcare System in Louisville, Ky., said he thinks Android "has great potential" — once phones based on the software become available on the AT&T and Verizon Wireless networks.

Laval wants to test Android with an application that hundreds of doctors use to check patient records wirelessly. But Baptist Healthcare is a Verizon user, and Laval estimated that 90% of the doctors are using the wireless application on Windows Mobile phones.

The T-Mobile G1 is the only Android-based phone available now. Network operator Vodafone Group PLC is scheduled to release a second model made by Taiwan-based HTC Corp. in Europe this month. And Samsung Electronics Co. plans to ship three Android phones this year.

The advantages of an expanded Android hardware lineup could be blunted, though, if Apple decides to end the deal that makes AT&T Inc. the exclusive U.S. carrier for the iPhone. *The Wall Street Journal* reported last week that the companies are talking about extending the agreement beyond its 2010 expiration date — but AT&T may need to sweeten the terms to keep its privileged position. ■

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■ THE GRILL

Virgil Griffith

The **tech provocateur** talks about **exposing the wicked,** staying out of trouble and designing **machines that can feel.**

Virgil Griffith is a doctoral candidate in computation and neural systems at the California Institute of Technology. He has been called a troublemaker, twerp, agitator and provocateur. As a teenager, he tried to sue his school over a drug-testing policy. Later, he was sued by Blackboard Inc. for exposing flaws in its campus ID software system. Griffith is perhaps best known as the creator of WikiScanner, which makes it possible to figure out who has made edits to a Wikipedia entry.

What are you working on now? The Tor2Web project I've been working on with [friend] Aaron Swartz is potentially a really big deal, but people don't understand it. People are familiar with Tor and how it allows you to access Web sites anonymously. I can search

Continued on page 16

Dossier

Name: Virgil Griffith

Title: Doctoral candidate

Organization: California Institute of Technology

Location: Pasadena, Calif.

Favorite technology: The Python programming language

In high school he was: "Idealistic, reckless and long-haired."

Ambition: "Create a machine who feels. Immanentize the eschaton."

Favorite nonwork pastime: "Jacuzzi tubs."

Philosophy in a nutshell: "The world is your playground. Shape it – don't let it shape you."

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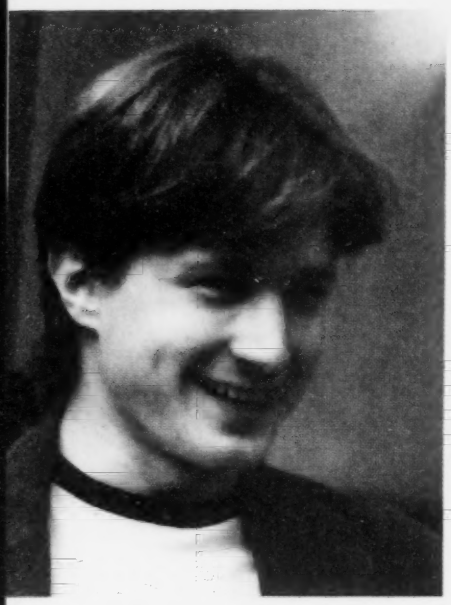

"The reason I'm in graduate school now is to create conscious machines that can feel.

Continued from page 14

Google without Google knowing who I am. OK, everybody knows that. What they don't know is that there's this very obscure feature which allows you to host a site within Tor itself. If you're on Tor and want to access a Web site not on Tor, it "anonymizes" your connection. If both Web sites are on Tor, it anonymizes both sides. It's a very bizarre way to work. It's the online equivalent of meeting in a dark alley. That's interesting. I have no idea what will happen, but it will be really exciting.

WikiScanner makes it possible to figure out who has edited Wikipedia entries. Was that what you set out to do? The tongue-in-cheek answer is that WikiScanner was created to create minor public disasters for organizations I don't like. I got the idea from seeing that congressmen were caught hiring staffers to whitewash Wikipedia pages. My thought was, let's just nip this in the bud. Let's just stop this behavior that is egregious and totally unacceptable. Everybody knew that companies were editing their own pages. I thought it was utterly hilarious to have them all exposed, to have them completely powerless and caught with their skirts up.

Don't you think it's ironic that a former hacker whose current project is creating anonymity on the Internet once helped police Internet behavior? Yeah, I really like the irony in that. But I'm no official authority. I have no role; I just do my own thing. Actually, I don't do these things. I make tools that allow other people to do these things. This is the only way I'm able to stay on the good side of everything. With WikiScanner, all the crazy liberal and conservative blogs were all just so excited to avenge their evil enemies. If I did all the [work myself], they would have said, "Oh, that's just Virgil." People wouldn't have been so happy.

Why is it important to you to stay on everybody's good side? Then I don't go to jail.

Were you headed there? Actually yes. There [could have been] federal jail time with the Blackboard thing. I was young back then, and now I'm more clueful about how to do things. I'm more subtle; I avoid doing things that will get me sued. It's just growing up.

Your goal is to create a machine that would feel grateful to you for designing it. What else would the machine feel and do? The reason I'm in graduate school now is to create conscious machines that can feel. That's my thesis. Technically speaking, [the machine] is just like us. We are machines that can feel. Machines that can feel technically are just like us, but better understood. [The idea of] machines that feel is really not all that weird or alien. You feel things for them, and they feel things for you. I spend most of the day doing theory work on trying to quantify the complexity of neural systems, and that's really math-y, and I really suck at math. In school, my best subjects were philosophy and writing.

What do you do when you're not working? I like eating Thai food a lot, and I enjoy going to the edgy-crazy art exhibits in Los Angeles. As far as work, I spend most of my time either doing academic stuff in information theory or spending time making the Internet a better and more interesting place.

What is the relationship between creativity and innovation? I view creativity as analogy-making. You have some existing parts. Part A is in front of you, and you say this is a little like Part B and perhaps I can combine them the same way. It's a kind of spontaneous analogy-forming. Also, I guess innovation would be a subset of creativity because there's a lot of creative things that don't go anywhere. You have to have one to have the other.

You're a self-described "disruptive" technologist. Is technology innovation disruptive by nature? Certainly, the big innovations have to be disruptive. [There's also a balance] between innovation and quality assurance. The kind of work I do is much closer to the innovation that is about quality assurance. In fact, I usually have people look over all of my code and everything I do. I guess it's up to each manager where you want to draw the line. If you want things checked all the time, things will progress really slowly and you'll probably lose. If you're a crazy Web 2.0 company and your server is down all the time, that's not going to work either. It's up to each manager how much creativity they can stomach.

How can companies engender more innovation? Google has the 20% project, which is one of the best ideas I have ever heard of. Google employees above a certain rank are given one day a week off to work on anything Google-related, and most of the new Google services and really hip ideas are coming out of there. If you want faster creativity and innovation, the idea of the 20% project is going in the right direction.

— *Interview by* **Julia King**

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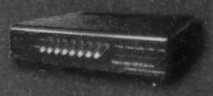

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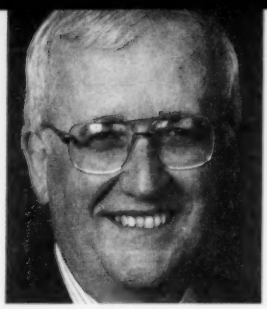
■ OPINION

Paul M. Ingevaldson

Don't Blame 'Em – Train 'Em



I OCCASIONALLY TEACH a session in the IT-MBA program at a local university. My subject is IT governance. After introducing myself, I ask the students what they think of their IT departments. Here is a sampling of the comments I've heard:

- They never get projects done on time.
- They never get the project done on or under budget.
- They don't understand our business.
- They are more loyal to IT than to our company.
- They have their own language. I can't understand them.
- Why does it take them so long to do anything?
- They lack a sense of urgency.
- They often want to try new, untested technologies. They take too much risk.
- They spend too much money.

In the class, I try to dispel some of these myths, but they still persist, aided no doubt by IT stereotypes depicted on TV and in the movies. The IT person is usually cast as a social misfit or worse, and seldom would he be described as a clotheshorse.

The amazing fact is that this image hasn't changed in the more than 40 years that I have been in the IT business. Despite the great strides we've made in competency and efficiency, a lot of senior and midlevel managers still treat us as a necessary evil.

What can be done?

I think we have to spend more time introducing our users to the realities of IT. Could it be that we are late on projects because users ask us for last-minute additions? Is it possible that the users never had time to tell IT what they wanted and then complained that we didn't provide a system that met their needs? Is IT routinely bypassed when it comes to company meetings where corporate strategy and corporate realities are discussed? Do users understand the actual costs of their requests? Does IT tell them?

■ We have to introduce our users to the realities of IT and train them to understand their role in the system development process.

We need to train our users to understand their role in the system development process. We must convince them that an IT system belongs to them, not to IT. They must learn that the only way to get a system that works for them is to be involved in every step of the development process. They must know that they are ultimately responsible for ensuring that IT resources are used effectively to solve their business problems. They must realize that the changes they make affect project completion dates.

This matter of user training should become a top priority of every CIO. IT should survey its users and determine their feelings about the IT department. If negative stereotypes are held by managers within the company, it is the CIO's responsibility to determine whether IT deserves such a reputation. If it doesn't, then the IT department should begin a series of manager training sessions to explain to users the level of commitment required from them to resolve their complaints.

Once this process has begun, it must be continued. The ranks of managers continually change, and new managers must in turn be educated about how IT works within the company. This includes how projects are initiated, how the steering committee prioritizes projects, how projects are developed and how project success is determined. In each case, IT's and the users' responsibilities should be clarified.

Perhaps this approach can lead to a much better working relationship between IT and users. IT professionals must become business people first and IT people second. Users must realize that part of their job responsibilities is to work with IT to develop excellent systems. This spirit of collaboration is the only way to break down the misconceptions that can harm the effectiveness of the IT department and the business. ■

Paul M. Ingevaldson *retired as CIO of Ace Hardware in 2004 after 40 years in the IT business. Contact him at ingepi@aol.com and visit his Web site at* www.paulingevaldson.com.

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Green IT is sprouting new strategies, such as the use of sensors that monitor power consumption and incentives that motivate employees to save energy. These 12 award winners are at the forefront of the movement.

PLUS:

- HOW WE PICKED THE WINNERS. PAGE 22
- THE EPA'S NEW GOLD STANDARD. PAGE 35

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ILLUSTRATION BY STEPHEN WEBSTER

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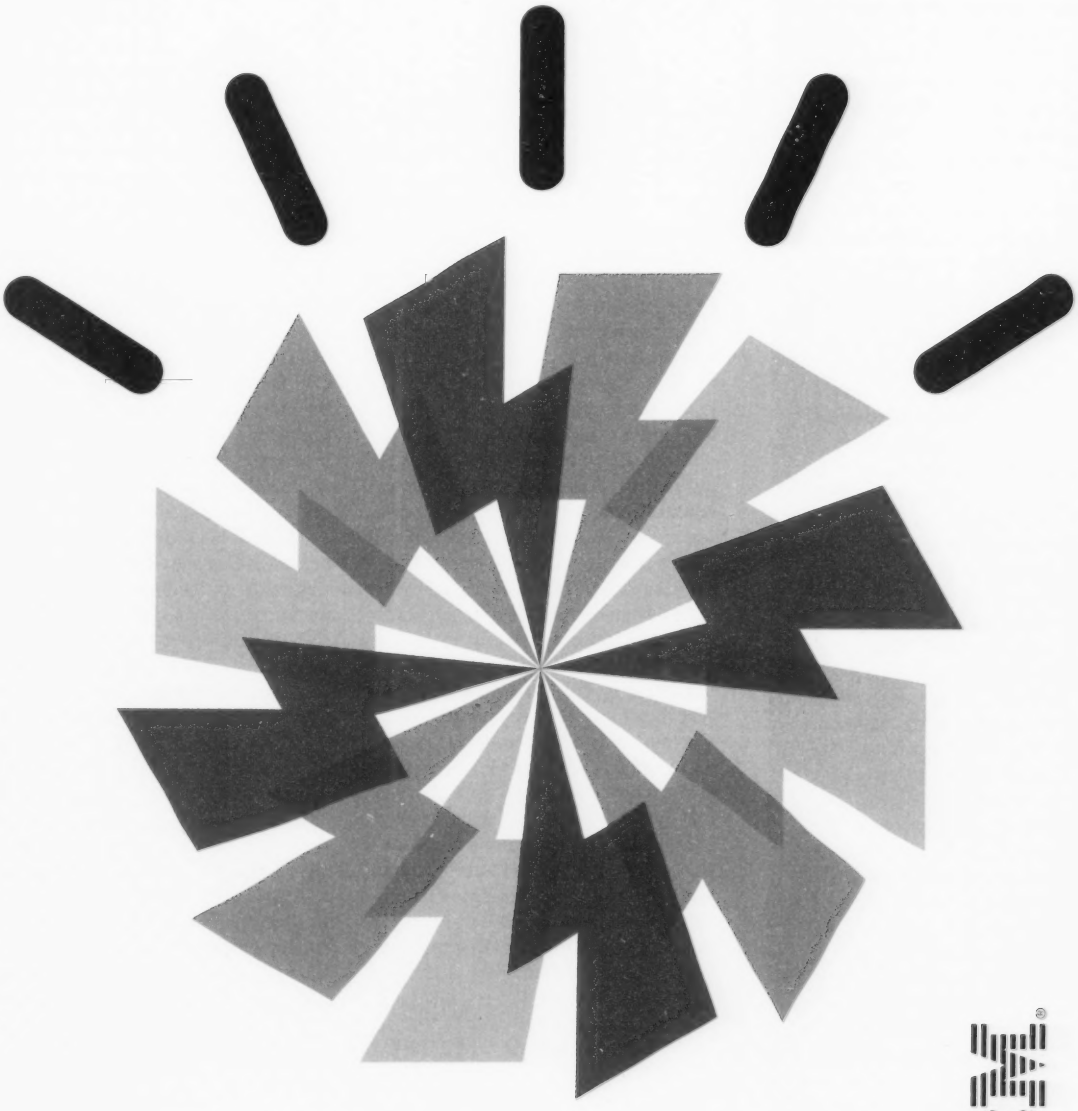

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HOW WE DETERMINED THE WINNERS

FOR THE SECOND year in a row, *Computerworld* set out to identify organizations that are implementing smart, efficient strategies to achieve "green IT." Organizations were invited to complete a comprehensive questionnaire online in January and February. The survey was sent out to the IT community through a variety of channels, including e-mail newsletters, *Computerworld.com* and e-mail broadcasts. Ninety-four organizations participated.

***Computerworld* then contacted representatives at the participating organizations, to verify that the information provided on their surveys was truthful and accurate. Only those organizations that filed verification letters were considered. *Computerworld* then applied a set of criteria, developed with the help of green-IT industry experts, to identify the organizations that are working to reduce energy consumption in IT equipment and are using technology to conserve energy and lower carbon emissions.**

A separate list was created to showcase IT vendors and data center suppliers. Included in this category are hardware, software, networking, IT infrastructure and data center vendors. Based on the weighting scheme developed, the top 12 Green-IT Users and top 12 Green-IT Vendors were chosen.

To view the full survey, visit *www.computerworld.com/html/research* and click on Top Green-IT Organizations.

JUST AS A SEED SPROUTS and stretches toward the sun, the green-IT movement has grown and pushed skyward in the past year. When the bright minds of IT start brainstorming, expect a bounty of new ideas and success stories.

With this second annual Top Green-IT Organizations issue, we showcase the achievements at 12 IT departments that are reducing power demands and using technology to create energy efficiencies. In addition, 12 vendors are honored in our online listing.

While green computing helps guard the planet, the underlying goal couldn't be more down to earth: saving money. And the biggest payoff still comes from shrinking IT operations. At State Street (No. 2 on our list), the server farm has been cut in half, and data centers are now set up as regional hubs that serve many local sites. Consolidation is still "the best and simplest way to achieve energy savings," says Gartner's Rakesh L. Kumar.

But smart companies know there are savings beyond data center walls, too, and even beyond the IT department.

Mohawk Fine Papers (No. 1) is looking outside of IT, quite literally, to apply technology to reduce energy consumption. Mounted throughout its buildings are thousands of sensors that monitor every watt used, pouring data into a Web-based system where energy consumption is tracked in real time.

Green IT is also about wringing every bit of efficiency from every effort. At PricewaterhouseCoopers (No. 5), a new data center uses a high-voltage system to maximize energy efficiency and reduce copper consumption. Its green design allows for 40 to 50 fewer air conditioning units than a conventionally designed space. And even employees will lower their carbon footprints as a result: When the new data center is operational, staffers will work shifts over four days instead of five, cutting the number of commutes by 40 each week.

In fact, employees might well play the most important role of all in an organization's green-IT efforts. And if money motivates businesses to think green, why not use it to entice employees to do so as well?

The Indiana state government (No. 6) has taken that step, incorporating metrics for green accomplishments into performance-based pay. At Burt's Bees (No. 10), employees' incentive pay is partially tied to a sustainability metric that measures reductions in energy consumption, water use and waste generation.

Where to next? Many of these organizations are looking to the desktop for the next round of savings. Allstate (No. 3) is moving computer resources from the desktop to the data center, where they can be shared. Office Depot (No. 9) is also beginning to virtualize its desktops. And Marriott (No. 11) has implemented 5,575 thin clients.

Only a small set of pioneering companies is moving toward virtualized desktops, says Forrester Research's Christopher Mines. It's no surprise that these green achievers are leading the way.

— Ellen Fanning

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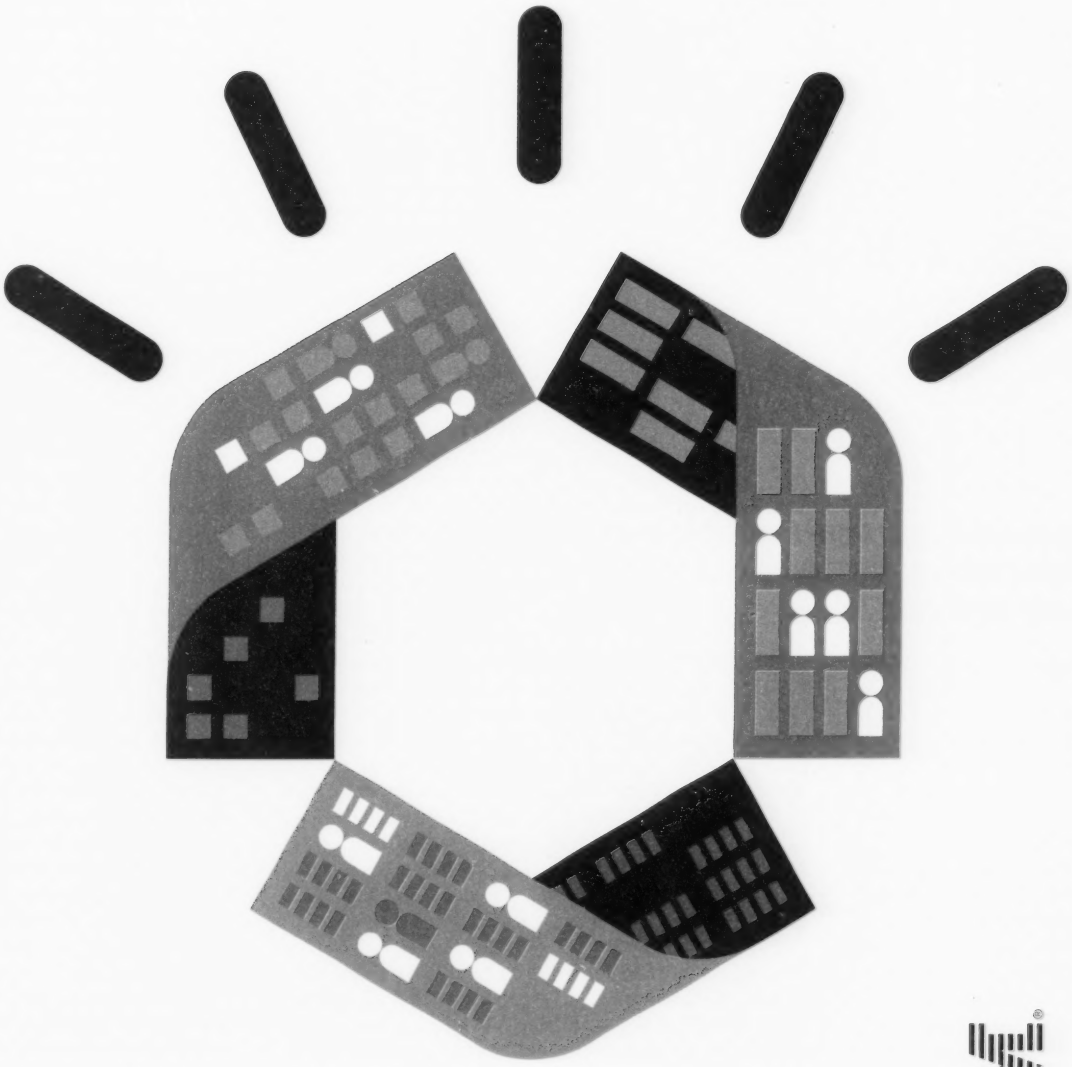

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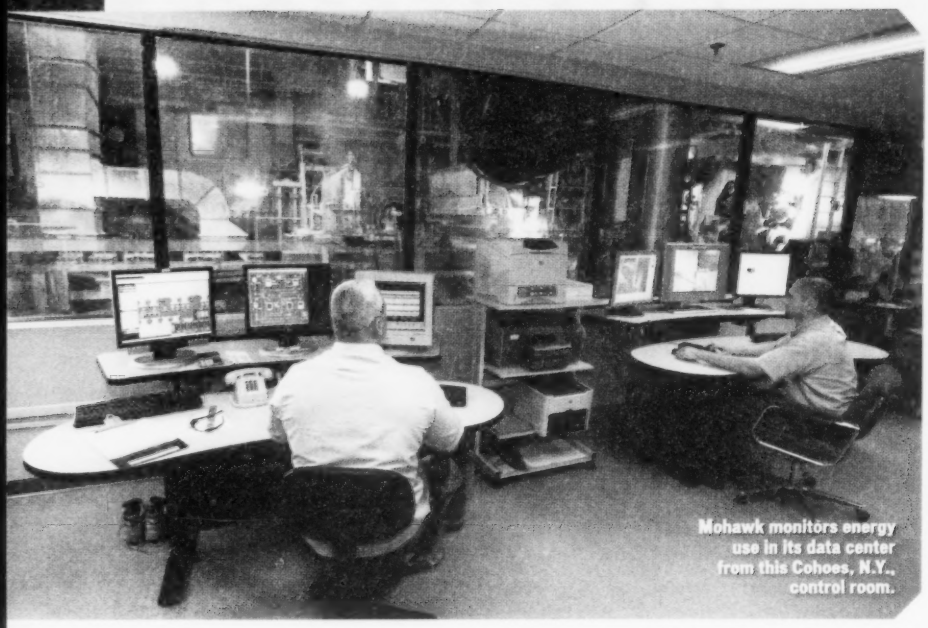

Mohawk monitors energy use in its data center from this Cohoes, N.Y., control room.

THOUSANDS OF SENSORS MONITOR EVERYTHING FROM OFFICE LIGHTING TO SMOKESTACK EMISSIONS.

PAUL STAMAS did everything he could to reduce energy consumption and the carbon footprint of IT operations at Mohawk Fine Papers Inc.

Then he looked for ways to help the company's non-IT operations go green.

The Cohoes, N.Y.-based manufacturer of recycled, eco-friendly paper consumes more than 100 million kilowatt-hours (kWh) of electricity each year to power facilities that house six paper-manufacturing machines, each the size of a football field. "IT is less than 1% of that," says Stamas, vice president of information technology.

NEAT TRICK

Upstate New York isn't an ideal location for generating solar power, but the technology is improving. Smart, movable solar panel arrays that are self-cleaning will eventually help power Mohawk's customer service center.

George Milner appreciates what Stamas has accomplished within IT. "Even a reduction of 100 watts is going in the right direction," says Milner, senior vice president of energy, environmental and governmental affairs. But it's how Stamas has applied technology outside of IT that has made the difference.

Last year, Stamas oversaw the implementation of the Infor Enterprise Asset Management (EAM) system, designed to optimize the efficiency of manufacturing plants and equipment. The company has also installed thousands of sensors that monitor everything from office lighting to smokestack emissions. It consolidates the data into several systems, including OSIsoft Inc.'s PI System, for analysis. "It's a Web-based system that lets us track, monitor and trend energy consumption in real time," says Milner.

"These sensor models give you much more real-time information than we've ever had before," says Howard Rubin, CEO of Rubin Worldwide, which tracks global technology trends. "Through the sensor system, [Mohawk] has a massive ability to continuously optimize" for peak energy efficiency.

Certainly, IT has done its part internally. Stamas has nearly finished virtualizing the company's servers. By consolidating 20 virtual servers per physical machine, he has cut the number of machines by 75% and reduced data center power needs by 50%. Mohawk also virtualized shop floor PCs, replacing the 100-watt desktops with 10-watt thin-client hardware. And the company deployed webconferencing and Tandberg IP videoconferencing systems. Those systems were used to coordinate the deployment of Infor EAM across six locations last year. "We executed the whole project through Web and videoconferencing," Stamas says.

The investment last August in Infor EAM, which cost "millions of dollars," is already paying off, Stamas says. "As a result of a various initiatives enabled by IT, such as our Enterprise Asset Management implementation in 2008, we have reduced our energy consumption by almost 10%, which translates annually to hundreds of thousands of dollars and carbon-emission reductions in the millions of pounds."

Mohawk's approach to green IT goes beyond what most companies do, says Rubin. "Mohawk has leveraged information technology throughout the whole supply chain," he says.

For the energy Mohawk does use, it buys 110 million kWh of wind-power renewable-energy credits to offset the carbon emissions, Milner says.

There's no single solution from an IT perspective when it comes to managing a green strategy, says Stamas. "It's really about baselining and influencing all kinds of processes and procedures," he adds. "It needs to be pervasive." ■

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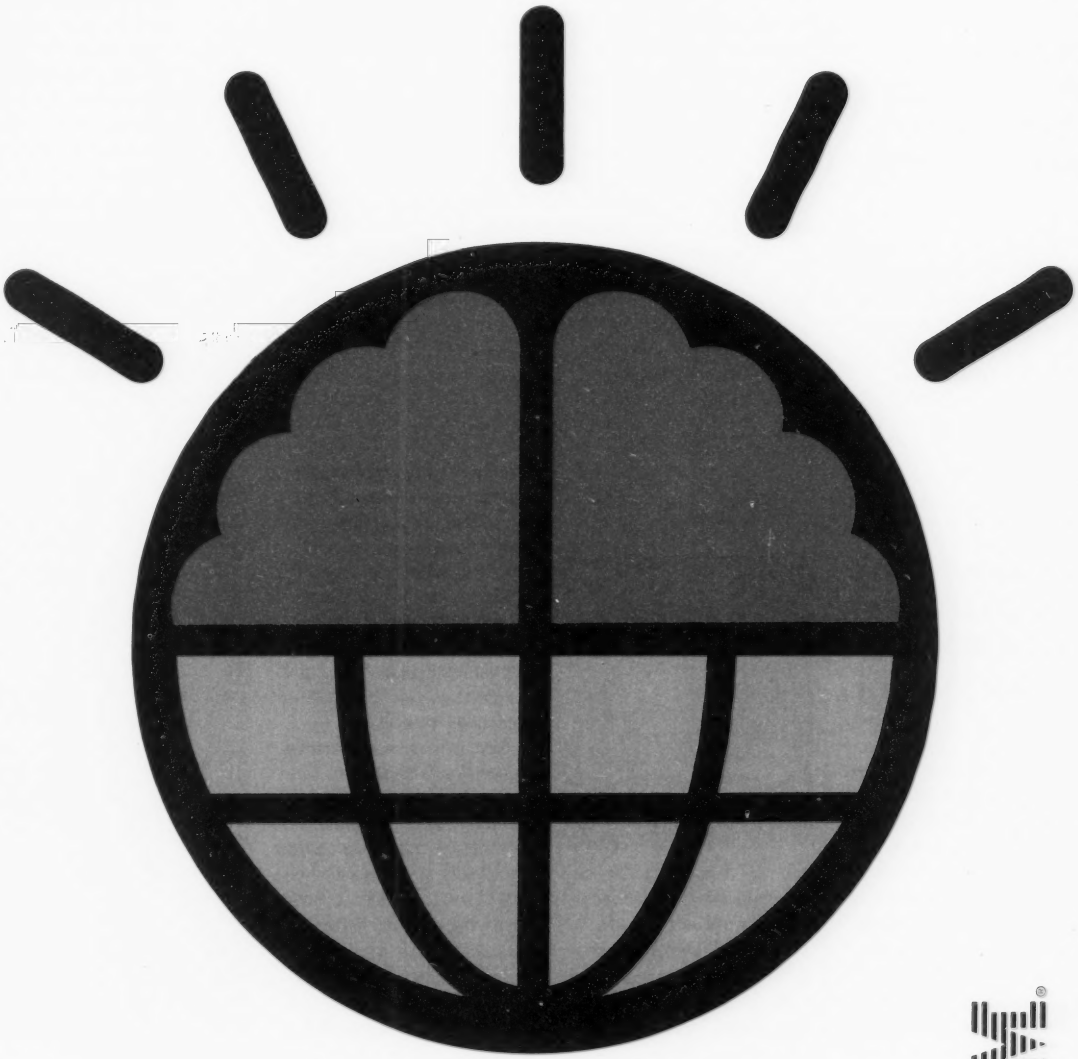

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REGIONAL HUBS WITH LARGE DATA CENTERS SERVE MANY LOCAL SITES.

2 STATE STREET Corp. began its green initiatives in earnest in 2003 and has been rolling them out systematically ever since. The process began by benchmarking energy and water use, emissions of greenhouse gases and recycling. Those became baselines for goals going out several years, beginning with the Boston-based financial services firm's Massachusetts operations and expanding throughout North America and Europe. This year, its Environmental Management System (EMS), the framework for its green program, will be extended into Asia.

The impetus for State Street's sustainability efforts comes from employees, top management, customers and outside groups, says Richard Pearl, vice president for community affairs and head of the company's Office of Environmental Sustainability. And as EMS has increased in breadth, so has it grown in depth, he says. For example, two years ago, State Street committed to buying 20% of the energy for its Massachusetts facilities from renewable sources certified by Green-e, an independent consumer-protection program. Last year, it boosted that to 50%, Pearl says.

NEAT TRICK

Financial institutions like State Street are required to purge information periodically, and that often involves disposing of magnetic tapes. The bank has contracted to burn its tapes in centers that are able to convert the heat to electricity that is fed into the commercial electric grid.

Madge M. Meyer, executive vice president and head of global infrastructure services, carries that broad view into IT. "I look end to end, from mainframes to end users, to identify opportunities for optimization," she says. At the user end of the spectrum, for example, the company has replaced 90% of its CRT monitors with energy-efficient flat-screen technology.

At the other end, State Street is consolidating the workload from many Unix-based servers onto big Linux-based mainframes. The resulting configuration will be more powerful, more energy efficient, and easier to provision and maintain.

"State Street has shown leadership in its environmental sustainability efforts," says Rakesh L. Kumar, an analyst at Gartner Inc. "The main thing is that consolidation — which we have been preaching for so many years — is still the best and simplest way to achieve energy savings." ■

FOUR DATA CENTERS WERE ROLLED INTO TWO, SAVING ABOUT $65 MILLION.

3 ALLSTATE Insurance Co. has had green initiatives in place for a number of years, including telework programs, videoconferencing systems, an in-house printing plant and printer-cartridge recycling efforts. But what has really moved the company into the front ranks of green-IT organizations is an ambitious effort started in 2006 to consolidate four data centers into two. The two centers will draw 6 megawatts of energy instead of the 27 megawatts that the old centers would have sucked up if left to grow naturally.

NEAT TRICK

Allstate's centralized electronic document repository holds some 1 billion documents. The system reduces paper copies and the number of redundant, interim electronic copies that had been kept in different formats.

Brandi Landreth, director of data center strategy, says the new centers will cost $55 million, or $65 million less than what would have been spent to build out the old centers under then-existing processes and footprints. "Green for green," she calls the cost savings.

Server consolidation is a big part of the plan. Allstate started that project in 2003 because it was running out of floor space in its old data centers, says Anthony Abbattista, vice president of technology solutions. The company will see at least a 7-to-1 reduction in physical servers from this effort, but it hopes to go as high as a 12-to-1 reduction, he says.

Beyond the new data centers, green programs abound. One takes the form of an in-house printing plant, the biggest such plant in the country, according to Allstate. It works with internal users, such as the billing department, to minimize the material used in mailings and to ensure that as much paper is recycled as possible.

What's next? "The next big frontier is the desktop," Abbattista says. The idea is to move computer resources – hardware, software and data – from the desktop to the data center, where they can be shared.

Allstate's Anthony Abbattista at the groundbreaking of one of the new data centers.

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capacity sits idle in
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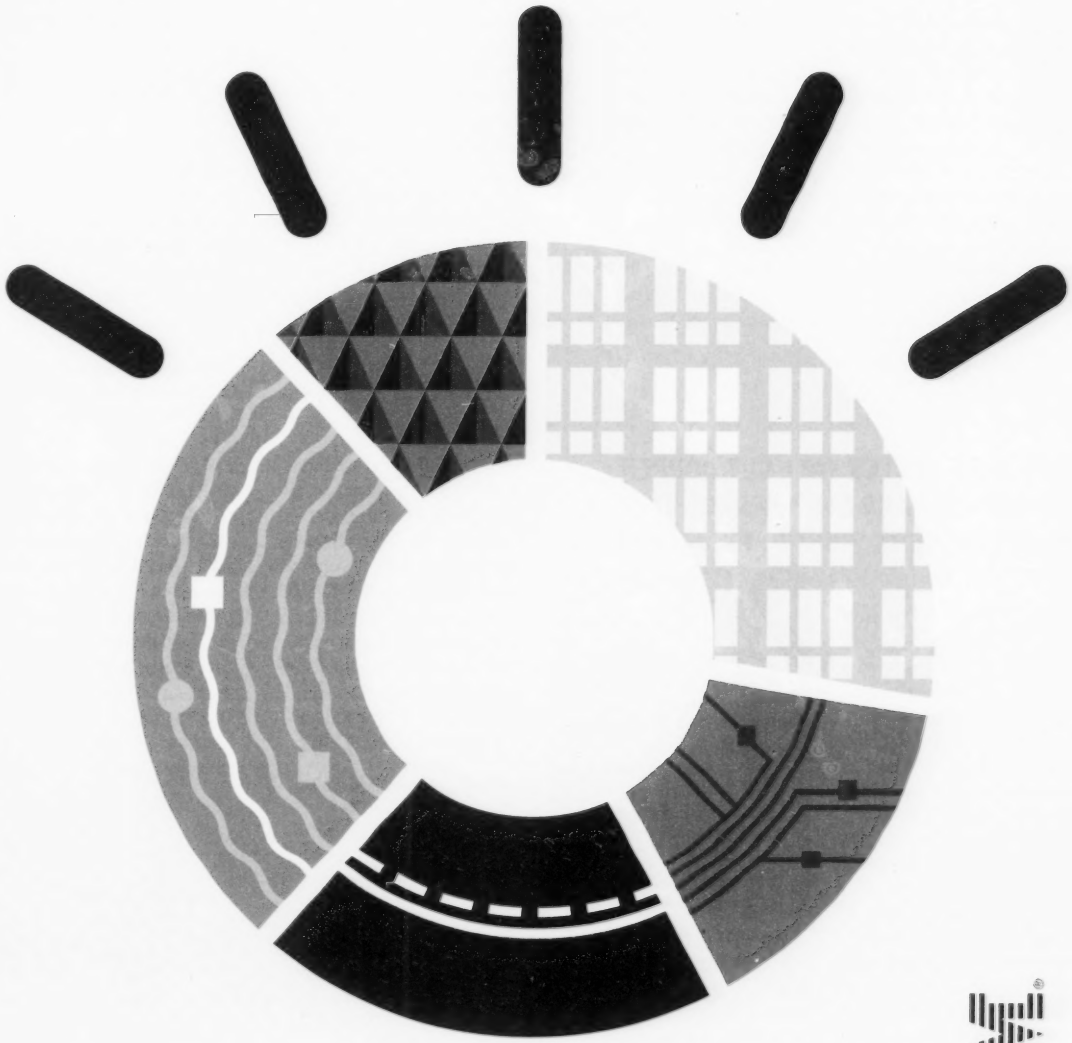

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4 Citigroup

EDUCATING END USERS ON THE CARBON COST OF ELECTRONIC STORAGE HELPS PROMOTE CHANGE.

BY ROBERT L. MITCHELL

MICHELLE Erickson doesn't really want to talk about how Citigroup has saved energy in its data centers, or how it is cutting power consumption for thousands of PCs. Everyone talks about that, says Erickson, initiative director for the global sustainable IT program at Citigroup. IT's role in sustainability is much broader. "We think about how Citi can reduce IT's environmental impact and then how IT can reduce Citi's environmental impact," she says.

"Michelle and the folks she works with are relentless at trying to understand the dynamics, get the data right . . . and treat everything as a system," says Howard Rubin, CEO of Rubin Worldwide, which tracks global technology trends for clients — including Citi.

That's not to say that Citi hasn't gone for the "quick hits" by pursuing data center consolidation, virtualization, desktop power management and thin clients. But Citi has also created a program to aggressively market the benefits of virtual servers to individual business managers, who can save 40% to 60% per month in IT chargeback costs. "We have a whole marketing campaign to go out to the businesses and show them how it saves money," says Scott Key, director of server optimization for Citigroup's global operations and technology group.

NEAT TRICK

An electronics recycling program netted 112,000 devices in the past two years and generated $30,000 in income that Citigroup donated to agencies supporting victims of domestic violence.

Erickson oversees all of Citi's green IT efforts as chairwoman of the Sustainable IT Subcommittee, which pursues an integrated, big-picture approach to green IT in areas ranging from paper substitution to power management. For example, when Citi made a

5 PricewaterhouseCoopers LLP

A NEW DATA CENTER WILL CUT COPPER CONSUMPTION AND EVEN REDUCE THE NUMBER OF WORK SHIFTS AND COMMUTES.

BY MARY K. PRATT

WHEN PricewaterhouseCoopers LLP brings its new 80,000-square-foot data center online this fall, the firm will showcase its latest green initiatives as well as the latest IT infrastructure.

The new data center uses high voltage to maximize energy use and reduce copper consumption, says John Regan, director of data center services. Its green design allows it to have 40 to 50 fewer air conditioning units than a conventional space. And when the data center is operational, its staff will work shifts over four days instead of five, cutting 40 weekly commutes.

"Our mind-set is on how we can maximize its potential,"

NEAT TRICK

PwC organized a green week in March, using the event to launch a blog where workers can share ideas. Employees were also encouraged to change their systems' power settings to shut down their monitors instead of using a screensaver with a moving color PwC logo that requires more energy.

says PwC CIO Stuart Fulton.

PwC's efforts to build a highly energy-efficient data center is the latest example of the firm's enthusiasm for driving down energy consumption and building up its green commitments. It also highlights the IT department's importance in this work.

The global services firm has led green initiatives for some time, but they were scattered throughout various departments, says Shannon Schuyler, managing director of corporate responsibility at PwC. But 18 months ago, with the creation of the Corporate Responsibility Group, the firm established overarching goals, including one to reduce its greenhouse emissions by 20% by 2012.

The tech department has been instrumental in moving PwC toward that objective.

Tech workers have centralized hundreds of servers from remote offices and virtualized 1,050 servers since 2004, resulting in annual savings of 2.75 million kWh. In the past two years, IT has rolled out VoIP, consolidating voice infrastructure onto the data network to realize energy and capital savings.

Pratt is a Computerworld contributing writer. You can contact her at marykpratt@verizon.net.

PwC's IT team digs in at the data center groundbreaking.

push into electronic statements to reduce paper and mailing waste, it factored increased IT costs into the equation. And it brokered a deal with the business units to move to power management for PCs and thin clients so that the real-estate group would reap the benefits on its electricity bills. "It's easy to do these things siloed. They look at the interactions between the pieces. That's the difference," says Rubin.

Erickson has made educating Citi's employees about green IT a priority. "It's very difficult for the average employee to understand the IT complexity and engineering that goes into everything," she says. For example, storage requires considerable power and cooling, so Citi has been informing users about the carbon cost of their electronic storage while encouraging them to delete unwanted files and avoid large file attachments. Those types of cultural and behavioral changes are 80% of the job, says Erickson.

Citi is in midst of consolidating within its data centers, virtualizing servers at rate of 100 servers per week — with a 73% reduction in power demand for each. It's also consolidating its data centers from 54 to 24 by 2010. By decommissioning servers, virtualizing and moving to more energy-efficient data center designs — such as its new LEED Platinum-certified data center in Frankfurt — it expects to increase efficiency by 30%.

Some efforts have required education, but Erickson has the full support of Citi's top management. "Everyone recognizes that it's the right thing to do," she says. ■

6 State of Indiana

DATA CENTER CONSOLIDATION, SERVER VIRTUALIZATION AND ENERGY-EFFICIENT DESKTOPS SAVE NEARLY $14 MILLION.

BY MARY BRANDEL

NEAT TRICK

The Indiana Office of Technology publishes a monthly newsletter detailing its green efforts, with the idea that making employees feel successful encourages them to contribute.

WHEN Gerry Weaver was hired as CIO for the state of Indiana two years ago, his mission was threefold: Dramatically improve IT service, reduce costs, and employ green initiatives wherever possible. At the time, the computing infrastructure was a patchwork of aging, nonstandard systems stretched across seven data centers.

By forming a centralized group, the Indiana Office of Technology (IOT), Weaver and his team have moved on their mission aggressively in the past two years. They have consolidated the seven data centers into one, plus a second for disaster recovery, while also reducing server count by one-third through virtualization.

Since many of the state's PCs were older models, it also upgraded 30,000 desktops to Dell machines using Intel Corp.'s vPro chip. That resulted in $400,000 in savings from a reduction in electricity use and an increase in productivity while reducing carbon-dioxide emissions.

The vPro enables IT to manage PCs over the network, eliminating the need to travel to the 800 sites the IOT serves. It is also Energy Star-compliant and provides power management capabilities such as an automatic power-saving mode. "If we can do something here versus two hours of drive time, we're happy," says Weaver.

In all, these moves have generated annual savings of more than $13.9 million. The IOT has been so successful, it's now discussing a pilot program in which it would invite other government entities to use some of its computing resources to eliminate some of their equipment and create further efficiencies.

The IOT motivates its employees by incorporating metrics for green accomplishments into performance-based pay. Chris Mines, an analyst at Forrester Research Inc., agrees that the intertwining of "green and greenbacks" is a big motivator in today's economy.

"Because of alignment of green and green, I don't expect that these initiatives will slow down dramatically or get thrown in reverse," Mines says. "Green is increasingly embedded into how companies operate and live. But the motivator is cost." ■

Brandel *is a* Computerworld *contributing writer. Contact her at marybrandel@verizon.net.*

The Indiana Office of Technology IT team: (front) Paul Baltzell, Dave Fischer, Martha Moore, Josh Burnett, Carol Batzloff and Damon Acton; (back) Brian Arrowood, Phil Parkinson, Dewand Neely, Sheneda Anderson and Byron Stoner

JEFF NICHOLS

EDUCATING END USERS ON THE CARBON COST OF ELECTRONIC STORAGE HELPS PROMOTE CHANGE.

4

MICHELLE Erickson doesn't really want to talk about how Citigroup has saved energy in its data centers, or how it is cutting power consumption for thousands of PCs. Everyone talks about that, says Erickson, initiative director for the global sustainable IT program at Citigroup. IT's role in sustainability is much broader. "We think about how Citi can reduce IT's environmental impact and then how IT can reduce Citi's environmental impact," she says.

"Michelle and the folks she works with are relentless at trying to understand the dynamics, get the data right . . . and treat everything as a system," says Howard Rubin, CEO of Rubin Worldwide, which tracks global technology trends for clients — including Citi.

That's not to say that Citi hasn't gone for the "quick hits" by pursuing data center consolidation, virtualization, desktop power management and thin clients. But Citi has also created a program to aggressively market the benefits of virtual servers to individual business managers, who can save 40% to 60% per month in IT chargeback costs. "We have a whole marketing campaign to go out to the businesses and show them how it saves money," says Scott Key, director of server optimization for Citigroup's global operations and technology group.

Erickson oversees all of Citi's green IT efforts as chairwoman of the Sustainable IT Subcommittee, which pursues an integrated, big-picture approach to green IT in areas ranging from paper substitution to power management. For example, when Citi made a

NEAT TRICK

An electronics recycling program netted 112,000 devices in the past two years and generated $30,000 in income that Citigroup donated to agencies supporting victims of domestic violence.

A NEW DATA CENTER WILL CUT COPPER CONSUMPTION AND EVEN REDUCE THE NUMBER OF WORK SHIFTS AND COMMUTES.

5

WHEN PricewaterhouseCoopers LLP brings its new 80,000-square-foot data center online this fall, the firm will showcase its latest green initiatives as well as the latest IT infrastructure.

The new data center uses high voltage to maximize energy use and reduce copper consumption, says John Regan, director of data center services. Its green design allows it to have 40 to 50 fewer air conditioning units than a conventional space. And when the data center is operational, its staff will work shifts over four days instead of five, cutting 40 weekly commutes.

"Our mind-set is on how we can maximize its potential," says PwC CIO Stuart Fulton.

PwC's efforts to build a highly energy-efficient data center is the latest example of the firm's enthusiasm for driving down energy consumption and building up its green commitments. It also highlights the IT department's importance in this work.

The global services firm has led green initiatives for some time, but they were scattered throughout various departments, says Shannon Schuyler, managing director of corporate responsibility at PwC. But 18 months ago, with the creation of the Corporate Responsibility Group, the firm established overarching goals, including one to reduce its greenhouse emissions by 20% by 2012.

The tech department has been instrumental in moving PwC toward that objective.

Tech workers have centralized hundreds of servers from remote offices and virtualized 1,050 servers since 2004, resulting in annual savings of 2.75 million kWh. In the past two years, IT has rolled out VoIP, consolidating voice infrastructure onto the data network to realize energy and capital savings.

is a Computerworld *contributing writer. You can contact her at marykpratt@verizon.net.*

NEAT TRICK

PwC organized a green week in March, using the event to launch a blog where workers can share ideas. Employees were also encouraged to change their systems' power settings to shut down their monitors instead of using a screensaver with a moving color PwC logo that requires more energy.

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PHOTO BY JIM BORALSKI, KPMG

KPMG

A NEW DATA CENTER RUNS NATURAL-GAS-POWERED MICROTURBINES THAT GENERATE ELECTRICITY.

BY MARY BRANDEL

7 ASK Dick Anderson, CIO at KPMG LLP, to tell you what the audit, tax and advisory firm's carbon footprint is, and he can answer immediately. He can also tell you the exact amount of this month's carbon savings resulting from the IT unit's server virtualization, videoconferencing, document management and e-waste recycling efforts. All he has to do is glance at an energyMetrics dashboard on his PC, which provides all that information monthly.

The dashboard is just one part of KPMG's Living Green program, which aims to measure, report on and reduce the firm's global carbon footprint by 25% by 2010, starting from a 2007 baseline. To support that goal, IT has taken on various projects, the most dramatic of which is a data center, unveiled in 2008, that co-generates up to 75% of its own energy.

The facility uses multiple sources for electrical power, but 14 natural gas-powered microturbines generate the majority of the electricity needed, up to 840 kilowatts. The electricity is also significantly "cleaner" than traditional electricity, says Anderson. And by recovering heat generated by the turbines, absorption chillers cool up to 420 tons of water, used for free cooling in the data center. In fact, 80% of the energy from the natural gas gets used through this design, which is three times more efficient than electricity grids. "As soon as it was fired up, the carbon footprint due to energy consumption dropped 13%," Anderson says.

IT also increased the firm's percentage of virtualized servers from 15% to 40% in 2008. And through technology upgrades, KPMG decreased the average energy consumption of its PCs by 11% last year.

And the company not only works with vendors to recycle technology equipment, to the tune of 45 tons in 2008, but it also ensures that its employees working on these efforts are certified through an in-house online training seminar to understand how to handle each type of device.

"We also ask vendors to send us verification as to where waste goes after leaving the door," says Darren McGann, manager of IT infrastructure operations at KPMG. ■

NEAT TRICK

KPMG has moved away from personal printers, reducing its printer count by 25%. And by activating power management and changing automatic printer settings to draft and duplex mode, it saves $100,000 per month.

Seventh Generation

DESKTOP PCs AND PERSONAL PRINTERS ARE OUT. ENERGY-EFFICIENT LAPTOPS AND ALL-IN-ONE PRINTERS ARE IN.

BY MARY K. PRATT

NEAT TRICK

Seventh Generation is encouraging workers to reduce their carbon impact by 20% by next year, and it uses an intranet to help them track their carbon footprints and find ways to reduce them. The company also offers financial incentives to workers who weatherize their homes or buy hybrid vehicles or energy-efficient home appliances.

8 SEVENTH Generation Inc.'s Dan O'Shaughnessy spent his summer workdays capturing sunshine. The IT technical support analyst had rigged up two RV-type solar panels, a marine battery and an inverter to power his laptop and 17-inch monitor.

It's not the typical setup at Seventh Generation, but O'Shaughnessy says everyone there is constantly looking for such innovations.

"It's part of our consciousness, so we think about it in everything we do," says Nancy Stoddard, vice president of IT.

The Burlington, Vt.-based company sells eco-friendly consumer goods, so the corporate culture supports socially responsible policies all around. But Stoddard says there hadn't

been a focus on green IT, because up until 2005, the company didn't have an IT department. That changed when Stoddard came on board four years ago, determined to build the company's infrastructure with an eye toward function as well as the environment.

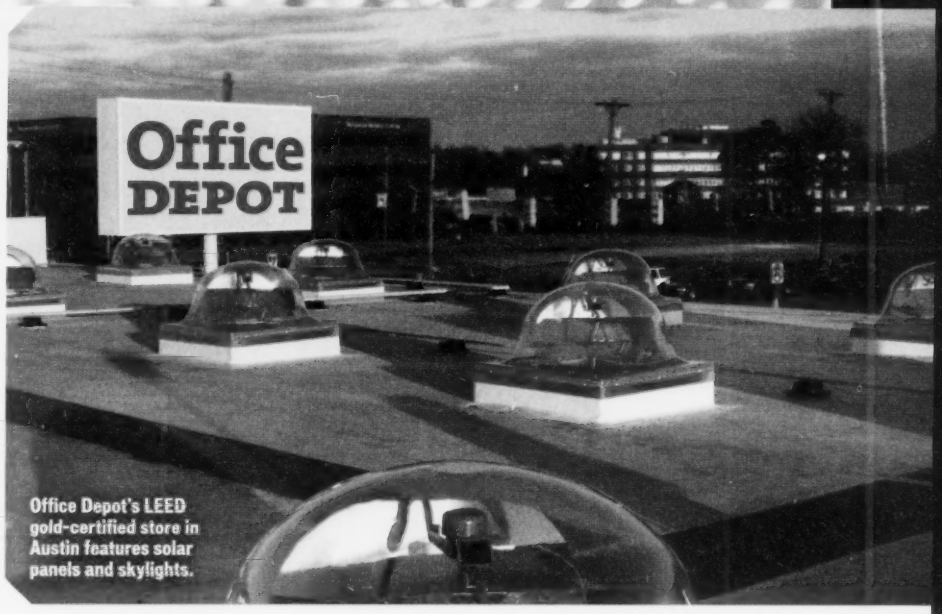
Stoddard and her team have logged quite a list of accomplishments.

They've moved workers from desktop PCs to more-energy-efficient laptops, and they buy laptops with EPEAT Gold certifications – meaning they meet certain environmental standards – rather than cheaper models. They've also virtualized their servers, trimming the number from eight to three and halving energy consumption.

They removed personal printers and set up three all-in-one printers in a copier room where air is vented outside to draw out the toxins from the printers. The IT workers are looking at using outdoor air to cool the server room, which could eliminate the need for air conditioning up to nine months a year. They're piloting a solar backpack that can charge handhelds. And they're planning to replace some laptops with thin clients, which use less energy while providing many workers with all the functionality they need.

Forrester Research Inc. analyst Christopher Mines characterizes some of Seventh Generation's initiatives as leading-edge practices, including its use of thin clients and its adoption of procurement policies that consider not just a product's energy needs but the environmental impact of its material and packaging as well.

"Green IT is just as much about process as it is about technology," he says.



Office Depot's LEED gold-certified store in Austin features solar panels and skylights.

Office Depot

THE COMPANY IS GROWING, BUT ITS GREENHOUSE GAS EMISSIONS ARE DOWN 10.1%.

BY MARY K. PRATT

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Siddiqui says one site among the company's 40 million square feet of facilities stood out, using much more energy than other locations. It turned out to be the company's Charlotte, N.C., data center.

Data centers are, of course, notorious for their energy consumption, but Office Depot's IT department wanted to be part of the energy solution, not part of the problem.

Michael Manis, vice president of global technology shared services at the Boca Raton, Fla.-based office supply retailer, says work on green-IT initiatives took off three years ago, when IT started to centralize and virtualize servers.

The move, Manis says, has cut energy consumption and extended the life of existing servers, reducing demand for new equipment.

Manis says his IT team also focused on cutting the data center's cooling requirements. When workers found that AC units cooled the whole data center floor, they closed vents leading to empty floor space, forcing cool air directly up through the bottom of the racks.

Office Depot is also beginning to virtualize its desktops, which is providing further incremental energy savings, Manis says.

Many companies have undertaken virtualization of data centers, according to Forrester Research Inc. analyst Christopher Mines. But only a few pioneers are moving to desktop virtualization or the thin-client model. "That's an architecture and technology that's far from mainstream," he says.

As a result of its efforts, Office Depot has reduced greenhouse gas emissions by 10.1% across North America, even though its physical footprint is growing. It has avoided approximately $6.2 million in electricity costs in its North American locations and saved nearly 66 million kilowatt-hours of electricity. ■

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Office Depot uses a system to analyze energy use at all of its facilities. By finding anomalies in this way, headquarters spots everyday actions – such as poorly positioned thermostats – that can affect power consumption.

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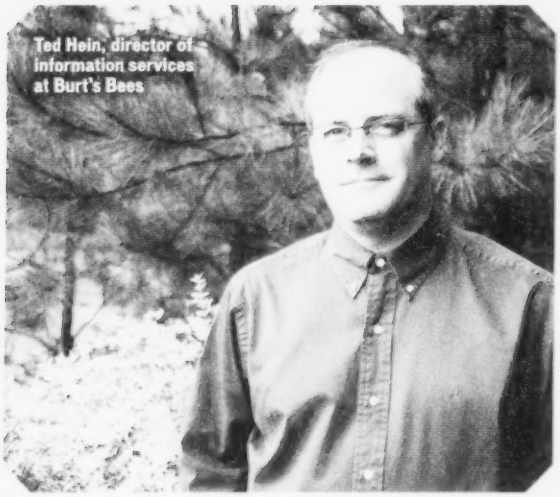

Ted Hein, director of information services at Burt's Bees

EMPLOYEE PAY IS PARTIALLY TIED TO REDUCTIONS IN ENERGY USE, WATER CONSUMPTION AND WASTE.

NEAT TRICK

Burt's Bees keeps compost bins in its break rooms. And it provides utensils made from potatoes that can themselves be composted.

10 WITHOUT even knowing its mission statement — to be "the greenest personal care company on earth" — you might expect the people at Burt's Bees Inc. to be environmental activists. After all, the quirky company with the bearded man on its labels is proud to proclaim that its products are made from 99% natural ingredients.

However, the company formalized that image in 2006 when it adopted an operating philosophy devoted to what it calls The Greater Good, under which it set Earth-friendly goals and started documenting its progress toward them in an annual report. By 2020, Burt's Bees plans to be carbon-free and operating on 100% renewable energy; it also plans to deposit no waste in landfills and have all its facilities LEED-certified.

It's so serious about these goals that it has tied employees' incentive pay not only to sales and profits, but also to a sustainability metric that measures reductions in waste output and energy and water use, as well as participation in community outreach activities.

"That separates the few from the many pursuing green," says Christopher Mines, an analyst at Forrester Research Inc. "Companies tend to focus on having the most energy-efficient gear or EPEAT-compatible desktops, and they miss the process and behavioral things you have to do as well, like changing performance standards and incentive structures to reflect overall greenness."

Just the same, IT plays a big part in achieving those goals at Burt's Bees. For instance, a move to virtualization has eliminated the need to purchase 31 servers,

Continued on page 34

SECURITY GUARDS NOW KEEP TABS ON THE THERMOSTATS, TOO.

11 AT Marriott International Inc., green initiatives come in all sizes. On the high end is the decision made by the $13 billion global hospitality company to lease underground space from Iron Mountain Inc. to accommodate its new data center. At 220 feet below ground, temperatures in the former limestone mine hover at a naturally cool 55 degrees Fahrenheit, so the cost of cooling the space is less than half the cost of cooling an above-ground data center of similar size. The site, in which an underground water supply will cool equipment via chilling towers, will double as a data recovery and development center.

On the much lower end, Marriott raised its air-conditioning temperatures 10% to 15% by simply adding a task into the daily routine of its security guards. As the guards make their rounds, they now monitor the thermostats in the data center.

"You can make a huge difference by doing the small things that aren't capital-intensive

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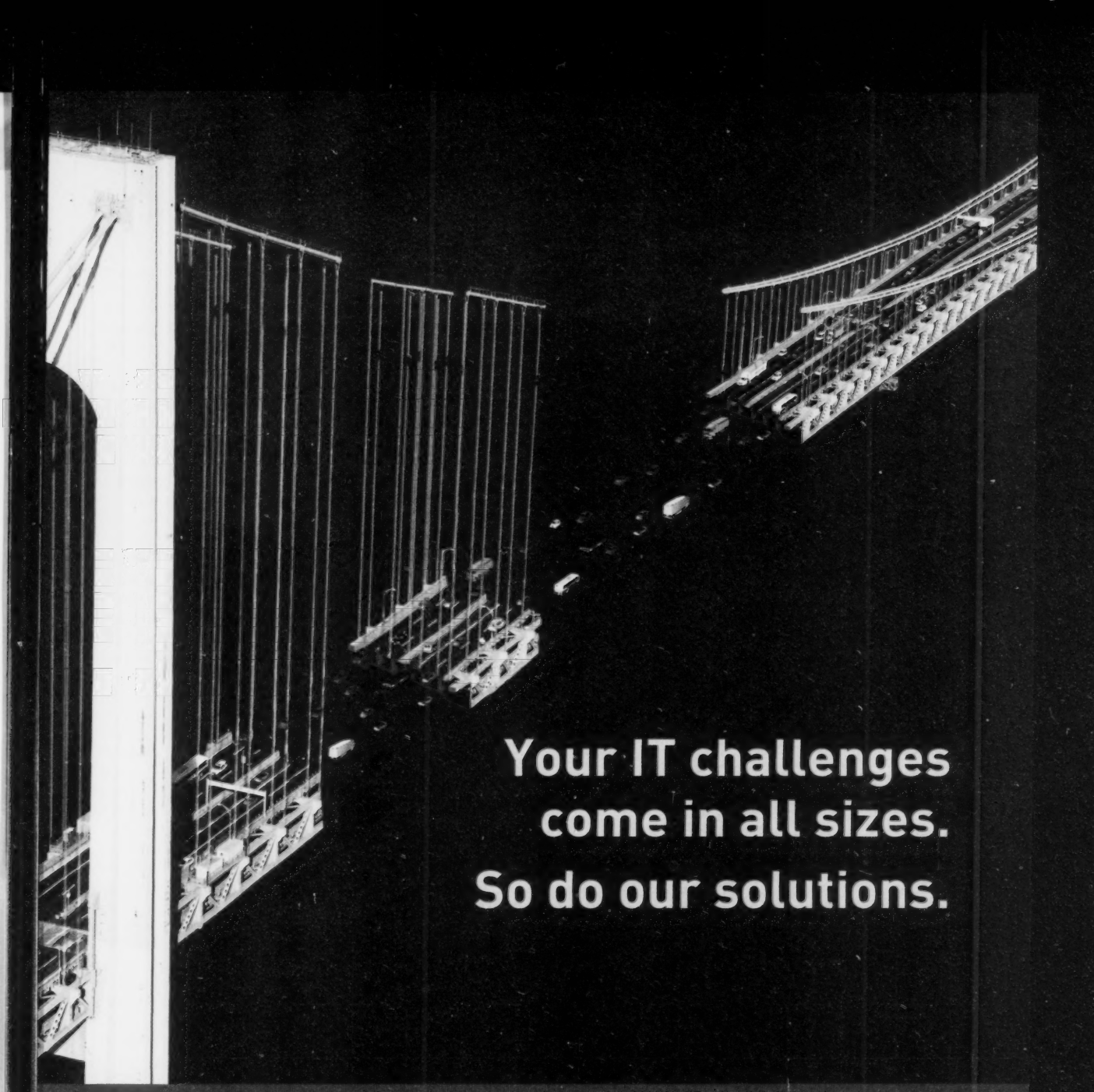

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Continued from page 32
and that, along with reduced cooling requirements, cut energy consumption by 180,000 kilowatt-hours per year — enough to power 10 three-bedroom houses, according to Ted Hein, director of information services.

And as part of a move to a storage-area network, IT used data de-duplication and thin provisioning, reclaiming more than 350GB of storage space for every terabyte of storage it moved. It also reused old server-attached storage as a virtual tape library, drastically reducing tape consumption and off-site storage expenses, Hein says. Next, he's evaluating a switch to thin clients.

Burt's Bees has additional plans in place to meet its green goals. For example, it hopes to find a way to use the hot air generated by the data center to heat its buildings, and it's researching more-efficient cooling systems that use ozone-free coolant. ■

WITH A NEW VIRTUAL ENVIRONMENT, APPLICATIONS RUN ON 150 SERVERS INSTEAD OF 600.

12

AUSTIN Energy promotes itself as a green company, delivering sustainable power options to customers and offering incentives to help them conserve energy.

So it's not surprising that the community-owned utility wants its internal practices, including those in IT, to match its public message.

For that reason, the IT department considers the environmental impact of its decisions, whether they're related to big projects, like a new data center, or more routine tasks, such as buying Energy Star 4.0 equipment and promoting video-conferencing to reduce travel-related emissions.

"You have to look at every green feature that the industry has to offer and leverage that green feature while still maintaining your service level," says Mike LaMarre, division manager of infrastructure management.

NEAT TRICK

Austin Energy pays $30 every two weeks to any employee who doesn't drive a car to work, so those who share rides, take mass transit, bike or walk to the office can earn extra cash.

Consider, for example, Austin Energy's data centers. Five years ago, IT started moving to a virtual environment. It now uses just 150 physical servers to run applications that might otherwise have required 600 machines.

IT carefully selects the hardware that goes into that environment, opting for servers with new multicore CPU technology, energy-efficient MAID (massive array of idle disks) storage with intelligent power management, and energy-saving de-duplication and compression technologies.

The data centers also run on 100% green energy, and a new data center will feature an energy-efficient design.

"The goal is to build a 100% green data center," says CIO Andres Carvallo.

Carvallo says his team is exploring other energy-saving opportunities, such as using DC power in the data center to eliminate the energy loss that occurs when converting from DC to AC. Austin Energy is also piloting the use of more-advanced temperature sensors in the data center in order to reduce cooling demands. And it's planning to switch as many desktop systems as possible to more-energy-efficient thin clients.

IDC analyst Vernon Turner says most companies undertaking green initiatives today are doing so for those kinds of returns in energy savings. But leading companies also make sure their green-IT initiatives don't just deliver green benefits, but also enhance quality of service and help lower costs. "They have to be integrated solutions," he says. ■

Continued from page 32
but still have a big impact on carbon footprint," says Dan Blanchard, vice president of enterprise operations.

Through virtualization, Marriott has so far reduced the number of servers in its server farm by 53%, which in 2008 provided a savings of $3.7 million. Its goal is 100% server virtualization. And despite a 27% increase in processing power and 32% growth in DASD volume, power consumption hasn't increased, thanks to server virtualization, hot/cold aisle isolation, high-efficiency cooling technology upgrades, insulation work and regular hardware refreshes.

NEAT TRICK

Marriott works with its top 40 vendors to buy price-neutral greener products. As a result, it now annually purchases 47 million Bic Ecolutions pens, which are biodegradable and are made from recycled content.

On the desktop, Marriott activated built-in power management capabilities, reducing energy consumption by 60% for laptops, 59% for desktops, 93% for CRT monitors and 86% for LCD monitors. It's also working to replace desktop PCs with thin clients, which use 50% less power per device, Blanchard says. So far, it has implemented 5,575 thin clients.

On the procurement side, the company purchased more than 9,700 Energy Star-compliant PCs in 2008. It also works with manufacturers to identify which of their products are designed to be more sustainable and efficient, according to Sharon Dorsey, senior director of technology sourcing and life-cycle management. Dorsey is also on the board of advisers for EPEAT, a program of the Green Electronics Council designed to help purchasers evaluate the environmental attributes of computer products.

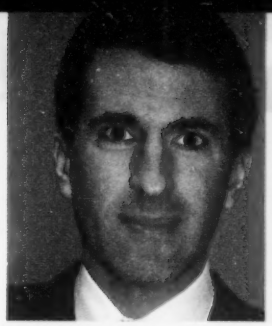
In fact, Dorsey feels so responsible that when hiring vendors to recycle Marriott's computers around the world, she takes pains to perform ample due diligence to verify that all the companies in the chain of custody are reputable.

On the recycling front, her efforts have paid off. In all, Marriott has kept more than 629,408 pounds of e-waste from ending up in landfills, Dorsey says.

■ OPINION

Michael Zatz

A New Green Gold Standard



A RECENT Environmental Protection Agency study on energy-saving strategies for servers and data centers noted that the industry uses an enormous amount of energy — more than 1.5% of all electricity generated in the U.S. — and that that number is expected to double over the next five years. So it's no surprise that many people see data centers as a major part of the climate change problem.

But the EPA sees this as an opportunity. Data center operators can take a leadership role as part of the global climate change solution. And toward that end, the agency is working to develop an energy performance rating system for data centers.

Just as it is familiar as a mark of energy efficiency in consumer electronics and appliances, in recent years, Energy Star has become known as a symbol of superior energy efficiency for commercial buildings. The more than 6,200 offices, schools, retail stores, hotels and other buildings across the U.S. that have earned the Energy Star label use 35% less energy and generate 35% less greenhouse gas emissions than average buildings.

With the EPA's energy performance rating system for data centers, tentatively planned for early 2010, data center operators will be able to assess the energy use of their facilities and will receive a metric that allows them to compare how they are performing relative to their peers. The rating will compare the energy use of one facility against that of similar facilities across the country, using the EPA's unique 1-to-100 rating system.

Here's how it will work: Data center operators will enter basic information about their energy use and operational characteristics into a password-protected account they establish in the EPA's Portfolio Manager, an online energy-benchmarking tool (*www.energystar.gov/benchmark*). A score of 50 indicates average performance. A score of 75 or higher means the facility is in the top 25% in terms of energy efficiency, qualifying the data center for an Energy Star label.

■ A comparative metric will show data center operators how they are performing relative to their peers.

But developing the rating is a complicated process, and much work remains to be done. One of the primary goals was to get buy-in from key industry stakeholders, including experts working on metrics development and a large number of data center owners and operators. After all, what's the point of developing a tool if people might not use it? Well, I'm pleased to report that after discussions with a diverse group of stakeholders, it was decided that the Energy Star 1-to-100 rating will be most effective if it is based on a ratio of total facility energy use to energy used by the IT equipment. Most people know this metric as PUE or DCiE. For Energy Star, the rating will be based on the average ratio for the facility, calculated from 12 months of actual measured data.

The release of the Energy Star rating for data centers will mark the culmination of more than two years of work by the EPA and hundreds of stakeholders. The agency is now nearing the end of a 12-month effort to collect data on energy use and operations from over 100 data centers of all types and sizes. This data, which is being supplied by dozens of forward-thinking organizations, will serve as the foundation for the development of Energy Star's unique comparative energy-efficiency metrics.

But the Energy Star rating for data centers won't be the end of the story. The EPA's ultimate goal is to refine the rating so that it is based on measures that compare the output or work from the data center with its energy use.

Our agency thanks the industry for its support of this difficult endeavor, and we look forward to awarding the first Energy Star labels to data centers, to show all Americans that data centers are part of the climate solution. ■

Michael Zatz *is manager of Energy Star commercial buildings at the U.S. Environmental Protection Agency. For more information, visit* www.energystar.gov/datacenters.

Career Watch

Employment Outlook

8% Percentage of CIOs who expect to add personnel in the second quarter.

6% Percentage of CIOs who are planning staff reductions in the second quarter.

In Robert Half Technology's Q2 2009 hiring survey, CIOs planning to hire workers outnumbered those who expect to lay off staff – a glimmer of good news among all of today's dismal economic reports. However, in its Q1 survey, the above figures were 12% and 4%, respectively.

Other findings from the survey:

- **Help desk/technical support and networking are the job areas experiencing the most growth.**
- **Desktop support is the technical skill set most in demand, overtaking network administration, which led as the top skill for the past two quarters.**
- **One in five IT executives who plan to add staff will hire a mix of full-time and contract workers.**

SOURCE: Q2 2009 ROBERT HALF TECHNOLOGY IT HIRING INDEX AND SKILLS REPORT, BASED ON TELEPHONE INTERVIEWS WITH MORE THAN 1,400 CIOS AT U.S. COMPANIES WITH 100 OR MORE EMPLOYEES

Golden Years: Retired for Now

Many older workers are putting off retirement because of the economic downturn and the precipitous decline in their 401(k)s and other stock holdings. In one of its online surveys, CareerBuilder.com found that 60% of workers over the age of 60 plan to delay retirement. And a majority of those workers say it will take years for them to recoup their lost retirement savings:

11% Think they might not ever be able to retire.

73% Say it will take them up to six years of extra work to recoup their lost savings.

24% Believe they can make their money back by working an additional year or two.

SOURCE: CAREERBUILDER.COM SURVEY OF 8,038 U.S. EMPLOYEES BETWEEN NOV. 12 AND DEC. 1, 2008

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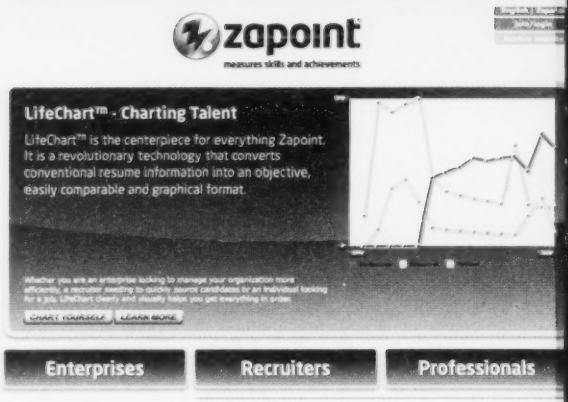
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Enterprises
Recruiters
Professionals

Q&A

Chris Twyman

The CEO and founder of **Zapoint Inc.** explains the company's talent management software.

Zapoint can be a little hard to wrap your head around. It sounds a bit like a job board and a bit like social networking. What's the best way to describe it? Zapoint measures skills and achievements. It's a new generation of human capital management software. Our patent-pending technology, LifeChart, is the centerpiece. LifeChart converts conventional résumé information into a graphical format that lets employers and others make an objective comparison. Professionals can compare themselves with peers as they look for a new job, recruiters can quickly source and rank candidates, and companies can identify skills areas where they are weak and so maintain the enterprise's overall competency.

OK, I can see the usefulness for employers to have skills presented as quantifiable data. Are employers making use of it? I mean, there wouldn't be much benefit for a job seeker to set up a LifeChart if employers don't know what that is or how to interpret it. Yes, both enterprises and recruiters are using Zapoint. Zapoint Enterprise lets executives identify, hire, manage and retain individuals who add real value to the organization. Zapoint Enterprise is composed of multiple, integrated product modules and has features for career management, skills benchmarking, performance and goals management, and succession planning, as well as a variety of talent-based analytics. Companies currently making use of it include Sovereign Bank and DirectTV.

Recruiters using Zapoint get smart résumé parsing, applicant-tracking and candidate search. And, of course, they can create their own LifeCharts and, like other professionals, compare their LifeCharts to others in the same community. It's a tool for creating a more objective career plan and discovering alternative ways to showcase one's professional achievements.

Skills are a key aspect of IT professionals' résumés, so I'd expect Zapoint to be useful for them. Is the tool being used by people in IT much? Yes. It's being used for both internal skills mapping and candidate placement.

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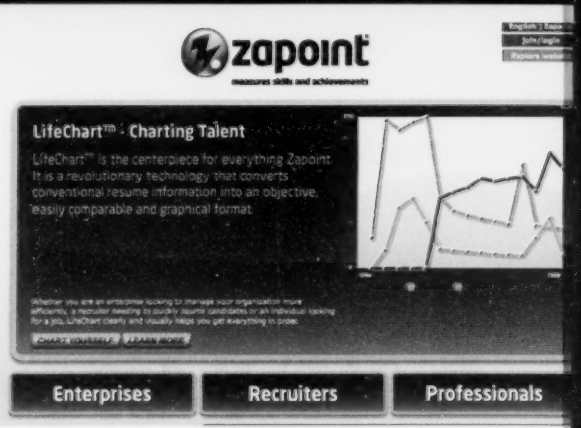
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Shark Tank

TRUE TALES OF IT LIFE AS TOLD TO SHARKY

Hardware Fix

This IT support pilot fish works as a contractor at a Defense Department facility. "We occasionally have to destroy BlackBerries that are too old to be reused," fish says. "But there isn't a very good wiping process for these things – at least as far as the DoD is concerned, with their precious secrets. So we generally destroy them by disassembling them and breaking the important components individually. But one day, a user drops one off and when I try to crack the case, I find that the tiny screws are all stripped. Fortunately, they're tearing up the road outside the office, and I have a good rapport with construction guys. 'Can I get you to crush this? Thanks!' *Crunch!* BlackBerry unit destroyed. Approved destruction method: backhoe shovel head plus pavement. No extra charge for embedding the gravel into the unit. I degaussed it too, just to be safe. Then I brought it to my boss and told him that his refurbished BlackBerry was just delivered."

Parts Is Parts

Company controller, who is also this pilot fish's boss, walks into the IT department one morning with his laptop – and he's very worried. "He told me that he had worked all last night on financial reports that he had to present to the board of directors today," fish says. "But after he came in this morning, he spilled a cup of coffee down the keyboard and now it wouldn't boot. And he didn't have a backup, so he was in panic mode." Fish and his co-worker go to work on the laptop, and they have an advantage: The company manufactures circuit boards, so they can use the board washer to clean the coffee off the laptop's motherboard. Once the laptop is reassembled and tested, everything works – and they decide to have a little fun. "My boss was a practical joker, so we sprinkled some extra screws and other electrical parts on the table before he came in to inspect his laptop," says fish. "He was relieved that we were able to resurrect his laptop and save his presentation for the day. Then he reluctantly asked about all the extra parts lying around. We told him those were just the parts we didn't think he needed anymore."

It's Easier That Way

At this psychiatric hospital, "our most challenged individuals are all too often medical doctors," says a pilot fish there. Overheard support call: "Hold down the Control key. . . . Did you hold it down? . . . Hold it down. . . . The Control key, are you holding it down? . . . The Control key. . . . Yes, the Control key. . . . On the keyboard. . . . Yes, the Control key. . . . The keyboard. . . . What is next to your mouse? . . . *That's* your keyboard. . . . Where are you sitting? . . . I'll be right over."

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■ FRANKLY SPEAKING

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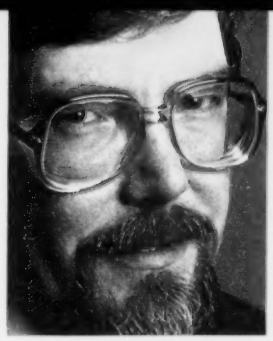


#amazonfail

MAYBE you heard about the problem last week at Amazon.com. Over a weekend, the Amazon sales rankings disappeared for hundreds of books, many of them with gay or lesbian themes (see story, page 6). The reaction from bloggers was first puzzlement, then howls about censorship. Twitter users amplified the controversy, adding the tag "#amazonfail" to their 140-character tweets.

Next came every e-business's nightmare: calls for a boycott.

Within days, *The New York Times* and other media outlets were covering the story. Meanwhile, Amazon's brief, muddled explanations trickled out. First, the authors and publishers who asked Amazon were told by customer service reps that the company does not publish sales rankings for "adult" materials.

Then the company said the problem was a system glitch, but offered no more details. That didn't satisfy bloggers and Twitterers, who discovered that the derankings had been going on since at least February.

On Monday, Amazon said in an e-mailed statement that 57,310 books had been deranked as a result of a "ham-fisted cataloging error" in categories that included health and reproductive medicine. By then, sales rankings had begun to reappear for the affected books.

What happened exactly? We still don't know. Amazon remains tight-lipped about the problem's cause and cure. A former Amazon employee said that, according to friends inside the company, an Amazon France employee had mistagged several book categories, and the error propagated to the rest of the company's global system. A hacker said he had caused the problem with a few lines of code — a claim that Amazon disputed.

And the still-outraged bloggers and Twitterers were mostly unwilling to accept that this was just an innocent error. Why should they? Amazon never explained it.

■ If you think this has nothing to do with your IT shop, think again.

If you think this has nothing to do with your IT shop, think again.

Yes, this was a public relations fiasco for Amazon. There are lessons here for every PR person and marketing department: Pay attention to customers. Pay attention to blogs and Twitter feeds. Pay attention to any sudden uptick in the same kind of question to customer service reps. Respond quickly, even on the weekend. And respond with something clear and meaningful.

And that's where IT comes in.

After all, whatever else this incident might be, it *was* a technical problem. Like any other technical problem, it may have been caused by human error, hacking, intentional employee action, buggy code, data corruption, hardware failure, bad documentation — or something else.

We're the people who can answer the question "What happened?" when there's a data breach, a Web site defacement or an embarrassing e-business foul-up.

But to do that, we need to form quick-response teams for high-profile problems. We need to prepare them, equip them and train them. We have to be willing to pull them off their usual work when there's a crisis.

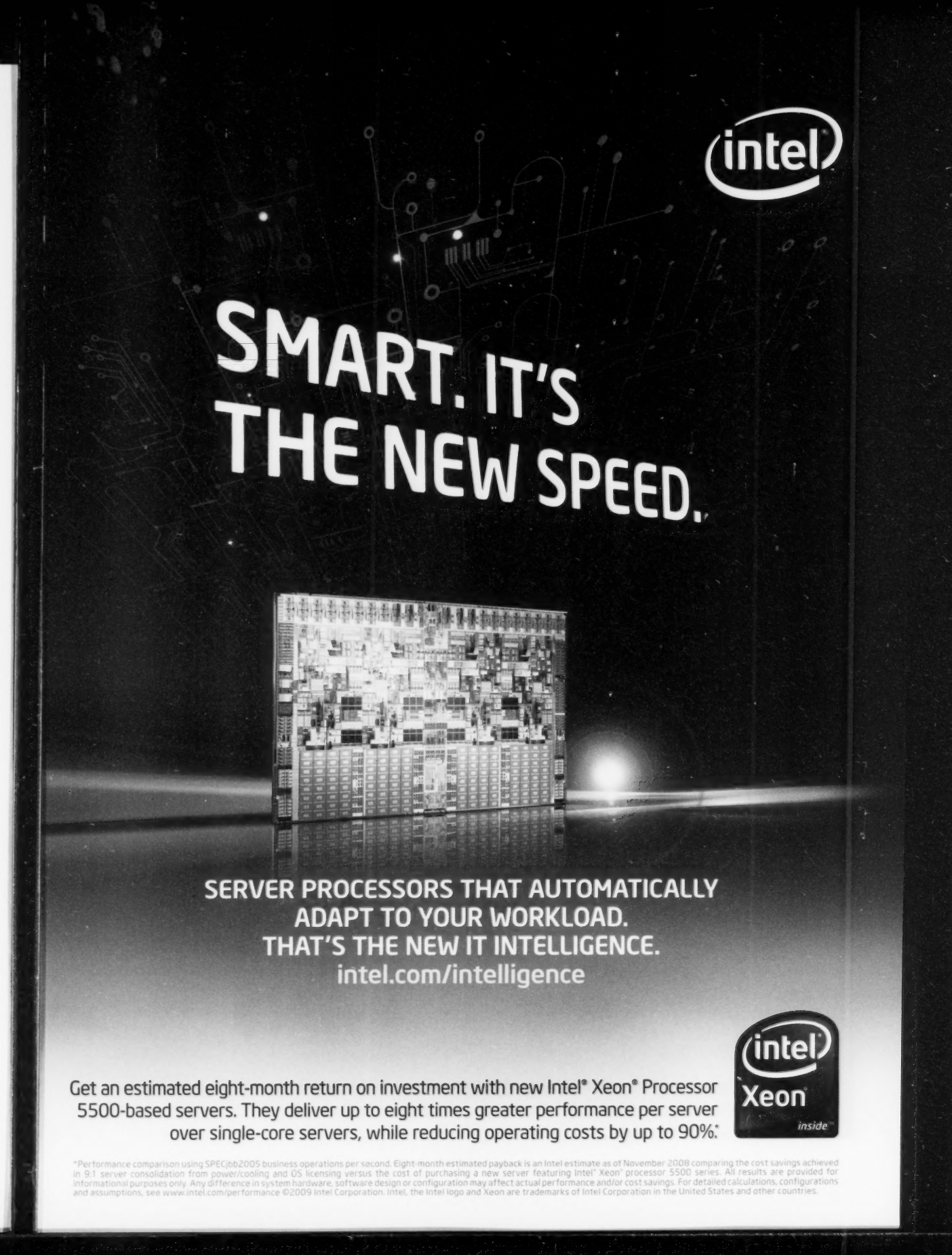
Yes, that's just one more thing for IT to handle during a budget-squeezing recession. But no one else can do it. And if we can stave off a boycott or customer loss, it will pay for itself.

How quickly and clearly we answer may make the difference for those PR people. If we can quickly give them a clear, detailed but human-understandable explanation, they might be able to quell the outrage.

Otherwise, they'll be stuck mumbling about a "glitch." Customers might start screaming boycott. And the mess will just get bigger.

Just ask Amazon. ■

Frank Hayes *is Computerworld's senior news columnist. Contact him at frank_hayes@computerworld.com.*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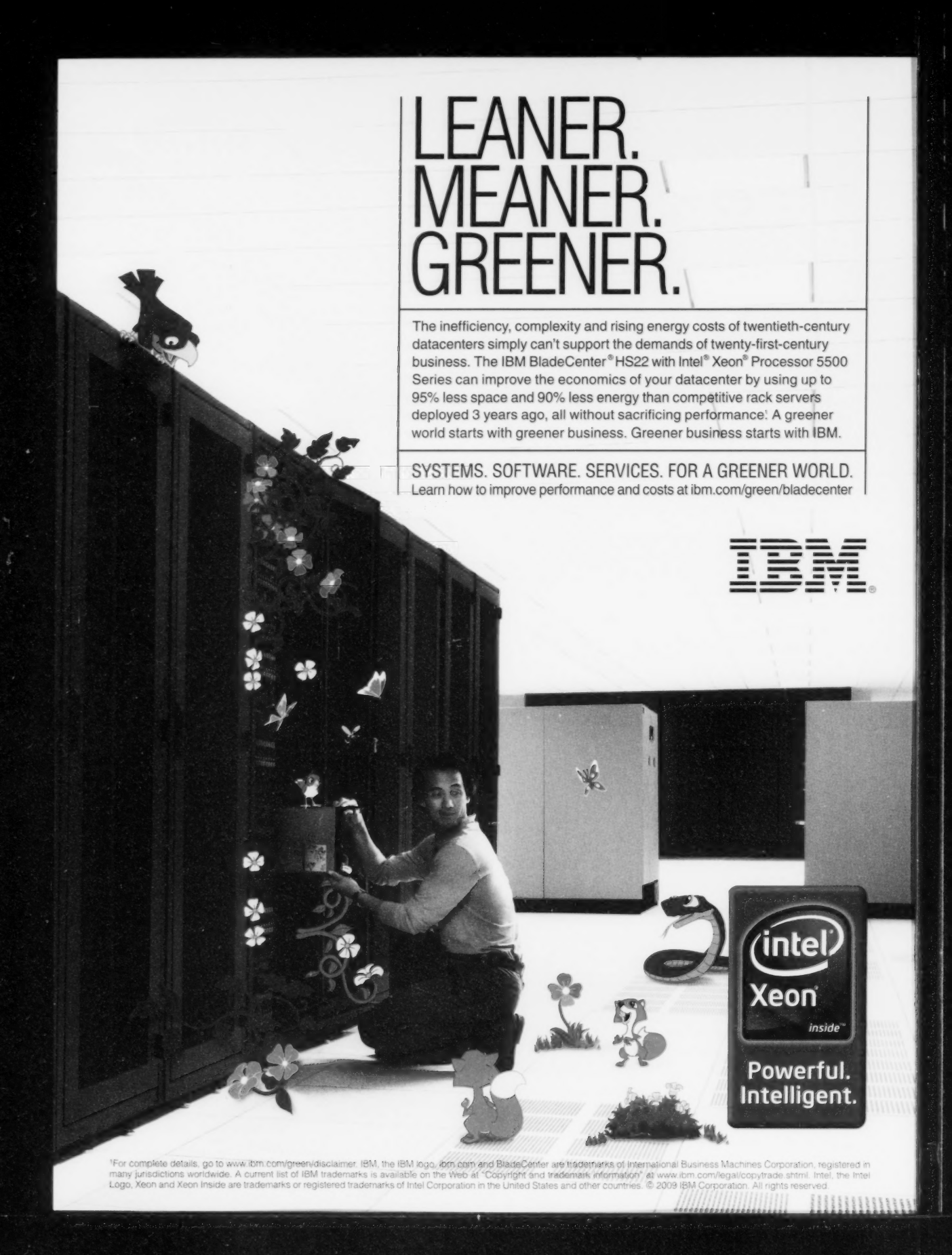
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